40 Rock Rd ©

POPULAR Computing WEEKLY

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Vol 3 No 46

New Oric micros

ORIC Products International plans to launch three new computers in Spring 1985 — two in the under £500 price bracket

The three comprise a £250 successor to the Atmos and two 8086–IBM compatible machines — one a £400 desk-top model the other a £3000 portable micro

The follow up to the Atmos, which had a working title of Stratos (see Popular Computing Weekly, September 20) is to be called the IQ164 in this country. The IQ164, which like the Atmos will use the 6502 chip, will have 64K Ram, but no internal Rom. Instead language cartridges can be plugged into two Rom cartridge slots provided on the machine. *Dr Logo* from Digital Research and Microsoft Basic will both be bundled with the machine

It will have a Centronics printer interface, RS232 modem port, and a built in disc controller

"It will be 100% software compatible with the Atmos," said Oric's managing Director

Oric managing director Barry Muncaster

Barry Muncaster "It will still be known as the Stratos on the continent, and we're hoping to launch it in France at the end of January In the UK it will be launched around March or April and the price will be in the area of £250"

The IBM compatible desk top machine will be available in several versions The basic model will have 128K Ram and 32K video Ram, and be priced around £400 and rather like the Advance, be cassette software based.

Then the user can add on a dual floppy disc drive or a Winchester hard disc, and a colour monitor to up-grade up to IBM-compatibility and a full business computer The full set will cost just over £8000, and CP/M software will be bundled," Barry Muncaster continued.

Finally the new Oric portable IBM-compatible machine

continued on page 5▶

Problems for Amstrad's CP/M

IT looks as though Amstrad owners who wish to run CP/M programs with the disc drive, when it is released could have problems.

Once the CP/M operating system disc has been loaded only 39 5K is left free for CP/M programs to run in. Yet by far the majority of CP/M titles require more than 40K to run.

"39 5K is certainly not a large amount of space,' said Chris Hall of Locomotive Software, which designed the Amstrad CPC646 computer "Most CP M micros leave around 50 to 54K There may well be a number of programs there would not be room for"

Roland Perry, Amsoft's technical manager, said, "The most important aspect of the disc

continued on page 5▶

Confusion over Coleco

THE future of Coleco's Adam computer is in doubt following a bizarre announcement by Atari Corporation (UK) that its main rival in the video game machine market, Coleco, is to pull out of the market The Atari press statement claimed "Coleco — the nearest rival to Atari's best selling 2600 Video Computer System — are withdrawing from the market place leaving Atari as the unchallenged leaders"

Yet Ideal Toys — which markets the Colecovision games machine which forms the basis of the Adam in the UK denied that Coleco had any plans whatsoever to leave the market:

"To say that Colecovision has been withdrawn is incorrect" said Philip Gibbs sales manager at Ideal Toys "It is very much still there in the market. Colecovision is also now very competitively priced with the Atari 2600 Jr and Jt machines. We recently made a dramatic reduction in price down to £49 99 — the same price as the 2600Jt.

continued on page 5▶

INSIDE) NEW READERS CHART — VOTE FOR YOUR TOP GAMES)

)View

Bruce Everiss — formerly of Imagine — commented this week that nobody seems prepared to take risks anymore

It is good, therefore, to see Automata's outstanding *Deus ex Machina* in the charts for the first time

This Christmas will see some of the most innovative software yet written — software which tackles the biggest challenge of all — how to add depth, humour, characterisation and emotion to the blobs on the screen.

Titles like Gargoyle Games *Tir Na Nog* Like *Deus* it is an attempt to produce an interactive film, but the results are entirely original. Rather in the style of an adventure, you control the brilliantly programmed central character as it moves around a maze of pathways. Cartoon animation of this quality has not been seen before — especially not on the Spectrum

Another first-class package is *Ghostbusters* from Activision for the C64 This adds depth by spinning off from the excellent comedy movie of the same name due for release in this country on December 7 But David Crane's game triumphs where all other tie-ins have not because, whichever way you look at it, it's a superb piece of programming It remains true to the film's plot and its version of the Ray Parker Jr hit theme tune and its speech is a terrific achievement Music like you've never heard before on the 64

I don't accept that the 'spark' has gone out of the new software It's just that for the most part, it is the newer companies that are now shining through.

All that is being proved is that once you've 'made it' and reached the top it is very difficult indeed to stay there

POPULAR Computing WEEKLY

Vol 3 No 46

)Presents...



)Futures...

Think you could design a great game? Prove it — enter our competition next week to story-board the sequel to *Kokotoni Wilf.*

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How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles and any accompanying programs should be original It is breaking the law of copyright to copy programs out of other magazines and submit them here — so please do not be tempted **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish although we will always try our best to make sure programs work.

Computer Trade Association Magazine of the Year

Keyboard for C64

SIEL — the Italian music keyboard manufacturer — has produced a professional quality music keyboard add-on for the Commodore 64

The keyboard can also be used in conjunction with Siel's MIDI interface enabling it to be connected with and control other MIDI-equipped instruments For example the software can 'split the keyboard into two sections with one playing Commodore 64 sounds and the other taking voice/sound information from a separate keyboard

Siel intends its Commodore 64 keyboard to form the basis of a developing system. There are plans for a separate sound generator, a low cost MIDI expander to allow a number of different sound tracks to be developed at once and additional software for sequencing and composing

The basic package consisting of the full-size 49-note keyboard and software on either cassette or disc is expected to retail at £125 00 and will be launched at the end of November

Amstrad CP/M

◀continued from page 1

drive is as an extension to the micro — the CP/M is a bonus As far as individual CP/M titles are concerned it depends on the type of program as to whether it will fit I don't know of vast numbers of programs that wouldn't run, although there will be restrictions

"We envisage people using CP/M on the Amstrad more for languages and utilities, rather than large spreadsheets or stock control.

"However, we do know of one company which could convert existing CP/M programs to fit on to the Amstrad. Original writers too may well modify the programs if there is the demand"

Amsoft itself will be releasing two CP/M packages, under the title Classic Business Applications The first is provisionally planned to contain programs for stock control, sales invoicing, sales ledger, purchase ledger and nominal ledger The second will contain an integrated database and word processor — *Micro Pen* and *Micro Script*.

Atari/Coleco

◀continued from page 1

In the US, a spokeswoman for CBS Coleco agreed. "Colecovision has not been withdrawn."

On Friday though, Atari UK's managing director, Simon Westbrook, said, "We have it on good authority that Coleco is withdrawing"

Oric

◀continued from page 1

will be priced at just under £3000 It will feature a built-in 80 column × 25 row screen display manufactured by Hitachi.

"We're hoping to be able to launch them all at the same time next spring Also the prices at the moment are approximate because we're dependent on the fluctuation on the dollar between now and then."

Beyond to market Spy vs. Spy

FIRST Star's *Spy vs Spy* game is set for release in the UK next week Beyond Software is to market the game in the UK

Spy vs Spy is based on the American comic strip of the same name from the magazine *MAD* "It can be played either by two players, or by one versus the computer The scene is a maze of rooms in an Embassy; both players are looking for secret plans hidden in a briefcase somewhere in the maze" explained Beyond's Clive Bailey

Beyond's agreement with First Star does not affect the US company's deal with Statesoft which markets other First Star products in the UK, such as *Astro Crash* and *Flip and Flop*

Explained Statesoft's John Fletcher "First Star did offer us *Spy vs Spy* and while we considered it, we didn't feel we could do justice to it."

Spy vs Spy will be initially released for the Commodore 64, at £9 95 for the cassette version and £11 95 on disc A Spectrum version is being planned for next spring, and Beyond is also considering converting the game for the Amstrad.

Ultimate releases 3D adventure

ULTIMATE'S follow-up to the recently released *Underwurlde* is now available, entitled *Knight Lore*

The game uses three dimensional graphics of outstanding quality, and comes very close to being a true interactive cartoon

Set in a 128-room castle, the player's task is to collect objects and bring them to one particular room in the castle where a wizard presides over a cauldron. The objects must then be deposited in the cauldron in a certain order

By night the player turns into a werewolf. After forty playing days, if the player has not collected the objects the game is lost as the player becomes a werewolf permanently With the werewolf persona travel in the castle is difficult and dangerous

Knight Lore is available on the Spectrum, and priced at £9 95

Versatile plotter from Penman

PENMAN, a new low-cost three-colour printer/plotter, has been launched by Penman Products A unique feature of Penman — which costs £180 — is its mode of operation. Up to three pens are carried on a remote robot unit, which is connected to the control unit via a flexible ribbon and moves around the drawing surface

Controllable from Basic by any micro with an RS232 port the remote pen arm can be used as a turtle, mouse, robot or primitive text digitiser Its design has earned it a place as a finalist in the Prince of Wales Awards.

Application packages are available now to use the Penman printer/plotter with the BBC B, Apple II and IBM PC with versions for most other popular machines to follow

Further information from Penman Products, 8 Ha zelwood Close Dominion Way Worthing W Sussex.

Prism expands Micronet for C64

PRISM has now officially launched its viewdata system to enable Commodore 64 owners to down-load software from the Micronet 800 database

The Commodore 64 micronet system is based on Prism's Modem 1000 The viewdata software included in the package is supplied on a Rom cartridge which fits into the C64 expansion port

The software will also enable 64 owners to access the Prestel and Viewfax 258 networks and allow contact between Commodore users and Spectrum and BBC users Details from Prism Microproducts, Prism House, 18/29 Mora Street, City Road, London EC1

The system costs £129 95

● Bob Denton has resigned as group managing director of hardware distributor, Prism Technology Holdings.

"Bob decided he wanted to go his own way after 2½ years of setting up and developing Prism," said Richard Hease who will take over the managing directorship "However, he is still a large shareholder and will continue as a non-executive director"

ZX Microfair

THE Christmas ZX Microfair takes place this weekend — open on Saturday and Sunday November 17 18 at Alexandra Palace in North London

The show begins at 10 00 am both days and admission will be £1 50 for adults and £1 00 for kids

QLUB complaint

I have a complaint relating to the Sinclair QL, not about the QL itself, as it is basically a very good machine, but about the QLUB.

Hopefully two thirds of QL owners — as that is the fraction of QL owners who have had the same misfortune as I have had to part with £35 for QLUB — will join me in denouncing the QL Users Bureau rip-off.

Firstly, the bi-monthly newsletter providing technical tips and suggestions for applications of QL software does not exist. I've had my QL for a quarter of my year's membership and all I've received is a membership card. Secondly, why do we need up-dates to the Psion packages under QLUB, when it is quite obvious that many non-QLUB members will need replacements (which the guarantee covers) because the originals occasionally crash. Thirdly, I have never used the Psion software assistance, mainly because the programs are straightforward so there is no need.

Also if a non-QLUB member did experience a legitimate problem I am sure Psion would help anyway.

Come on, Sir Clive, what have you done with our £¼million — if it is still in the bank we would like a refund, please.

R Haigh
82 Towers Road
Poynton
Cheshire

From Toledo

Did anyone else notice in the Spectrum chart in issue 38 had Toledo Low Level at number 1?

Must have been written by Klinger from the Medical Applications Software House — or M*A*S*H for short.

Anthony Perrin
3 Rookfield Close
London N10

Raid over Moscow

I was outraged to see the advertisement for a program called *Raid Over Moscow* in your November 1 issue.

I am surprised that this ad was allowed to appear in the same magazine as the Automata ad with lines in it like "the Soviets believe their treachery will lead to total world domination."

The only saving grace was that the program was American-released through US Gold — I am pleased that no British company would stoop so low.

I hope to see a non-political *Popular Computing Weekly* in the future with more advertisements for decent peaceful programs.

KT
West Byfleet
Surrey

Spectrum membrane

Robert Soverville of Dumfries in Peek & Poke, October 25 issue, wanted to know where he can get a new Spectrum membrane for his keyboard.

They are available, price £4.95, from H S Computer Services, 22 Blenheim Drive Warton, nr Preston, Lancs.

Mike Salem
Hilderbay Professional Software
8-10 Parkway
Regents Park
London NW1

More homework

Regarding Jagdeep Sandu's letter, he should do more homework. The first serious software purchasable namely Metacomco's Editor-Assembler proves all the critics wrong. Using these programs with, say, 256K memory expansion it will be possible to edit five or six text files simultaneously, all in individual fully scrollable windows whilst at the same time running a Basic program, assembling source code to a microdrive file and running an on-screen clock! These facilities are available to a lesser extent with normal memory due to the large size of the programs, but they are still extremely impressive. If this isn't multi-tasking with 'full windows' then I don't know what is.

On benchmark averages the QL is about 6% slower than the BBC — a small price to pay for a Basic which is more extensive and far more user friendly. Anyway nobody writes in Basic if they want speed. A 68008 processor running at 7.5MHz is infinitely more powerful than a 6502 running at 2MHz. Machine code written on the QL will run (with suitable drivers) on any 68000 machine and even on machines which will appear in the near future using the new 32 × 32-bit 68032 chip which is the most powerful microprocessor in the world. Which potential main-frames is the BBC upwardly compatible with?

And regarding expansion, the QL is in a different league. When will the BBC ever directly access 1M of memory? Look at the range of add-ons that Quest have just announced. Using the standard expansion bus, in the not too distant future people will connect the 68881 maths co-processor (although the QL is faster than any sub £3000 non-68000 machine in this area, anyway) and the 68486/68487 video chip combination.

All the above is better and cheaper than the BBC equivalents will ever be.

All I can do, Mr Sandu, is to offer you £20 scrap for your BBC — I could make better use of the Ram chips!

John Lawlor
36 Stonefield Drive
Inverurie
Aberdeenshire

I suspect CIA involvement

Renumber carefully

A warning to QL users: be careful how you use the *Renumber* command.

I was writing a large program which contained a few *Goto* statements. On Renumbering those *Gotos* to unwritten lines, the following occurred.

100 GO TO 101 → *Renum* → 100 GO TO 32767
100 GO TO 10 → *Renum* → 100 GO TO 100

Is it all a plot to make us give up *Gotos* in favour of procedures?

F E Revi
5 Southway
Lanchester
Durham

Win a ZX Spectrum+

Just in case you missed last week's issue we are offering a chance to win a brand new ZX Spectrum+, complete with its six bundled software packs — worth £179.95.

All you have to do is correctly identify the eight software programs which appear in Sinclair's current TV advert for the Spectrum+.

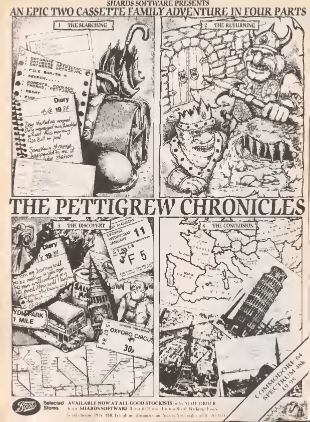
Fill in the form below with the eight titles and send it off to 'Sinclair Competition', *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD to reach us no later than midday on Friday December 7.

There is also a tie-break in case more than one entrant gets the eight program names correct. Read the idea for a new Sinclair game and think up a good title for it: As an heir to a vast fortune you have to find and piece together the fragments of a portrait distributed around an isolated mansion. **The judges decision is final.**

Name
Address

1	2	3	4
5	6	7	8

Fortune game title


SHARDS SOFTWARE PRESENTS
AN EPIC TWO CASSETTE FAMILY ADVENTURE IN FOUR PARTS
1 THE SEARCHING
2 THE RETURNING
THE PETTIGREW CHRONICLES
3 THE DISCOVERY
4 THE CONCLUSION
COMMODORE 64
SPECTRUM 48K
Boots
Selected Stores
AVAILABLE NOW AT ALL GOOD STOCKISTS
MAIL ORDER
SHARDS SOFTWARE

Battleships

Batten down the hatches as you fight it out with your Amstrad CPC 464 in Battleships by Steve Lucas

This is a computerised version of the familiar game of Battleships in which you and your opponent hide five ships on a nine by nine grid. Each location on the grid is given a co-ordinate name such as A4 (letter first) and you must take turns with your opponent (the computer) to fire torpedoes at your opponents grid. The winner is the one who sinks all their opponents ships first.

When typing in this program, take care to distinguish between the variable l (lower case L) and the number 1.

I decided to make the computer play a rather dumb game so as to give you (the player) a chance of winning! You could make the game more difficult by altering the routine which searches for your ships (Lines 1960-2150).

Program Notes

Conversion

The program makes use of many special commands available in Amstrad Basic.

The *While Wend* loop could be replaced with either a *Repeat Until* loop or a conditional *Goto*. Note that the *While Wend* loop checks for the condition at the start of the loop whereas a *Repeat Until* loop checks the condition at the end of the loop.

Lower$* converts a variable to lower case, while *Upper$ converts a string to upper case.

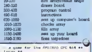
Locate X, Y moves the text cursor to position *X, Y*. This is equivalent to *Print Tab (X, Y)* on the BBC, *Print At* on the Spectrum and *Plot x, y, A$* on the Oric.

Ink is used to select the four colours available in the palette for Mode 1 a 40 column mode. *Paper* and *Pen* choose foreground and background colours from the *Inks* available.

The Amstrad interprets upper case and lower case variables as being identical.

Variables	
cc	holds computer score
yc	holds your score
a$(x,y)	holds your board
b$(x,y)	holds computer's board
c$(x)	holds names of ships
d$(x)	holds input co-ordinates
x1,y1,x,y	hold co-ordinates
l,p.	hold length of ships

Line No	
10-30	selects mode/colours
60	titles/instructions
70-170	dim arrays/reads ships
180-320	draws board
330-470	program control
490-610	instructions
620-1000	sets up computer's board
1010-1070	checks array
1080-1130	fills array
1130-1480	sets up your board
1810-2180	fires torpedoes






```
10 REM ** Battleships  - a game for the AMSTRAD CPC 464 **
20 REM **  C  Steve W. Lucas **
30 REM ** version 1 A  July 1984 **
40 MODE 1: INK 0,0: INK 1,24: INK 2,20: INK 3,6
50 BORDER 13
60 GOSUB 490
70 DIM a$(9,9),b$(9,9),c$(6)
80 FOR x= 1 TO 6   90 READ c$(x)
100 NEXT x          110 DATA "
120 DATA "Destroyer       "   130 DATA "Submarine
140 DATA "Cruiser             150 DATA "Battleship
160 DATA "Aircraft Carrier"   170 CLS:PEN 1
180 REM ** Plot numbers across top **
190 FOR x=1 TO 9
200 LOCATE x*2+1,1:PRINT CHR$(48+x)
210 LOCATE x*2+19,1:PRINT CHR$(48+x)
220 NEXT
230 REM ** print centre line down screen
240 FOR x=2 TO 20
250 LOCATE 20,x: PRINT CHR$(149)
260 NEXT
270 REM ** Plot letters down side of screen **
280 FOR x=1 TO 9
290 LOCATE 1,x*2+1: PRINT CHR$(64+x)
300 NEXT 310 LOCATE 1,20
320 PRINT STRING$ (40,CHR$(154))
330 GOSUB 630
340 GOSUB 1140
350 REM ** yc= your score: cc= computer's score **
360 GOSUB 1790
370 GOSUB 1980  380 IF cc=20 OR yc=20 THEN 400
390 GOTO 360
400 IF cc=20 THEN a$="I win" ELSE a$="You win !!!"
410 CLS:LOCATE 16,10: PEN 1: PRINT a$
420 LOCATE 5,20: PEN 2: PRINT"Do you want to play again <Y/N> ?"
430 a$=INKEY$: IF a$="" THEN 430
440 a$=UPPER$(a$)
450 IF a$="Y" THEN RUN
460 CLS: LOCATE 16,10:PEN 3: PRINT"Goodbye !"
470 END
480 END
490 CLS: LOCATE 15,5: PEN 1: PRINT"Battleships"
500 PEN 2: LOCATE 7,7:PRINT"<C> Steve Lucas July 1984"
510 PEN 3: LOCATE 1,10:PRINT"
This is a computerised version of the traditional game."
    PRINT:PRINT:PEN 1: PRINT"The game is played on a
9 x 9 grid.     Each point on the grid is identified by a
coordinate such as A4"
530 PRINT In this version, your opponent is the
computer. The computer will hide 5 shipson the grid and you
must do the same."
540 PRINT:PRINT:PEN 2: PRINT"Press the <Space Bar>
```

```
to continue.."
550 aa$=INKEY$:IF aa$=" " THEN 550
560 CLS:PRINT"You will take turns with the computer to guess the location of your opponents ships "
570 PRINT"The winner is the one who locates all their opponents ships first "
580 LOCATE 2,22: PEN 1: PRINT"Press the Space Bar to start game"
590 aa$=INKEY$: IF aa$<>" " THEN 590
600 RETURN
610 END
620 REM **subroutine to choose computer's positions**
630 LET m=INT(RND(1)*8)
640 REM ** array a$(x,y) holds position of ships **
650 LET a=INT(RND(1)*2)
660 REM ** if a=0 then ship is horizontal otherwise the ship is vertical **
670 LET s=6: REM ** size of aircraft carrier **
680 k=INT(RND(1)*3)+1: l=INT(RND(1)*3)+1: REM random x and y coordinates of ship
690 GOSUB 1020
700 IF aa=1 THEN 670: REM ** if location already has ship - try again
710 z$="A"
720 REM ** put ship into array **
730 GOSUB 1080
740 a=INT(RND(1)*2): REM ** ship horizontal or vertical
750 s=5: REM ** size of ship **
760 LET k=INT(RND(1)*4)+1: LET l=INT(RND(1)*4)+1: REM ** random coordinates of ship
770 GOSUB 1020
780 IF aa=1 THEN 760
790 z$="B"
800 GOSUB 1080
810 a=INT(RND(1)*2)
820 s=4: REM ** ship size **
830 k=INT(RND(1)*5)+1: l=INT(RND(1)*5)+1: REM random coordinates of ship
840 GOSUB 1020
850 IF aa=1 THEN 830
860 z$="C"
870 GOSUB 1080
880 a=INT(RND(1)*2)
890 s=3
900 k=INT(RND(1)*6)+1: l=INT(RND(1)*6)+1
910 GOSUB 1020
920 IF aa=1 THEN 900
930 z$="S": GOSUB 1080
940 a=INT(RND(1)*2)
950 s=2
960 k=INT(RND(1)*7)+1:l=INT(RND(1)*7)+1
970 GOSUB 1020: IF aa=1 THEN 960
980 z$="D"
990 GOSUB 1080
1000 RETURN
1010 REM ** check if array element is empty **
1020 aa=0
1030 FOR p=0 TO s
1040 IF a=0 THEN IF a$(k+p,l)<>"" THEN aa=1
1050 IF a=1 THEN IF a$(k,l+p)<>"" THEN aa=1
1060 NEXT
1070 RETURN
1080 FOR p=1 TO s
1090 IF a=0 THEN a$(k+p,l)=z$
1100 IF a=1 THEN a$(k,l+p)=z$
1110 NEXT
1120 RETURN
1130 REM ** Set up your board **
1140 FOR p=6 TO 2 STEP -1
1150 k$="Ship Size ="+STR$(p)
1160 LOCATE 1,21: PEN 1: PRINT k$
1170 ab=0
1180 LOCATE 1,23: PRINT"Enter the bow position of your
1190 LOCATE 1,24: PRINT c$(p): FOR pl=1 TO 330: NEXT
1200 LOCATE 1,24:PRINT"
1210 LOCATE 25,24: PRINT"
1220 e=25
1230 FOR a=1 TO 2
1240 d$(a)=INKEY$: IF d$(a)="" THEN 1240
1250 LOCATE e,24: PRINT UPPER$(d$(a))
1260 e=e+2: d$(a)=LOWER$(d$(a))
1270 NEXT
1280 LOCATE 25,24: PRINT"     "
1290 GOSUB 1440: y1=y:x1=x : REM ** check if point on board
1300 IF ab=0 THEN 1150
1310 LOCATE 1,23:PRINT"Enter the stern position of your "
1320 LOCATE 1,24: PRINT c$(p):e=25
1330 FOR a=1 TO 2
1340 d$(a)=INKEY$:IF d$(a)="" THEN 1340
1350 LOCATE e,24:PRINT UPPER$(d$(a)):e=e+2 : d$(a)=LOWER$(d$(a))
1360 NEXT: FOR pp=1 TO 330: NEXT
1370 LOCATE 1,22:PRINT"
1380 GOSUB 1440: y2=y: x2=x: REM ** check validity of point
1390 IF y1=y2 THEN GOSUB 1510: GOTO 1420
1400 IF x1=x2 THEN GOSUB 1650: GOTO 1420
1410 LOCATE 1,22: PRINT"You have made a mistake ": ab=1: GOTO 1180
1420 NEXT
1430 RETURN
1440 y=ASC(d$(1))-96
1450 IF y<1 OR y>9 THEN GOSUB 1490
1460 x=VAL(d$(2))
1470 IF x<1 OR x>9 THEN GOSUB 1490: REM ** display error **
1480 RETURN
1490 LOCATE 1,22: PRINT"Incorrect co-ordinates: try again":ab=1
1500 RETURN
1510 l=x1-x2: IF l<1 THEN l = x2-x1
1520 l=l+1
1530 IF l<>p THEN GOSUB 1490: p=p+1: RETURN
"C" ELSE IF l=3 THEN zz$="S" ELSE IF l=2 THEN zz$="D"
1550 REM ** check if location occupied **
1560 IF x1>x2 THEN kk=x1:x1=x2:x2=kk :REM ** swap coordinates around if wrong way **
1570 FOR e=x1 TO x2:IF b$(e,y1)<>"" THEN GOSUB 1490:p=p+1:RETURN
1580 NEXT e
1590 FOR e=x1 TO x2: b$(e,y1)=zz$: NEXT
1600 FOR e=x1 TO x2
1610 REM display choice
1620 LOCATE e*2+1,y1*2+1:PRINT zz$
1630 NEXT e
1640 RETURN
1650 l=y1-y2: IF l<1 THEN l=y2-y1
1660 l=l+1
1670 IF l<>p THEN GOSUB 1490:p=p+1:RETURN
1680 IF l=6 THEN zz$="A" ELSE IF l=5 THEN zz$="B" ELSE IF l=4 THEN zz$
="C" ELSE IF l=3 THEN zz$="S" ELSE IF l=2 THEN zz$="D"
1690 REM ** check if location already occupied
1700 IF y1>y2 THEN kk=y1:y1=y2:y2=kk: REM swap coordinates around
1710 FOR e=y1 TO y2: IF b$(x1,e)<>""
THEN GOSUB 1490:p=p+1:RETURN
1720 NEXT e
1730 FOR e=y1 TO y2: b$(x1,e)=zz$:NEXT
1740 FOR e=y1 TO y2
1750 REM ** display choice of ship **
1760 LOCATE x1*2+1,e*2+1:PRINT zz$
1770 NEXT
1780 RETURN
1790 LOCATE 1,21: PRINT"Enter your missile coordinates now:-"
1800 LOCATE 1,22: PRINT
1810 e=25
1820 LOCATE 1,23: PRINT
1830 LOCATE 1,24: PRINT
1840 LOCATE 1,25: PRINT
1850 ab=0
1860 FOR a=1 TO 2
1870 d$(a)=INKEY$: IF d$(a)="" THEN 1870
1880 d$(a)=LOWER$(d$(a)):LOCATE e,24: PRINT UPPER$(d$(a)): e=e+2: NEXT
1890 GOSUB 1440: REM ** check if point is valid
1900 IF ab=1 THEN FOR h=1 TO 330:NEXT: GOTO 1790
1910 REM ** check if you have already guessed location **
1920 IF a$(x,y)="*" THEN LOCATE 1,22: PRINT"Already tried ":FOR h=1 TO 330: NEXT:GOTO 1790
1930 REM ** check if computer has ship there **
1940 IF a$(x,y)="" THEN a$(x,y)="*": LOCATE x*2+19,y*2+1:PRINT"*" : SOUND 1,7,10,7,0,0,10 : RETURN
1950 REM ** now display location **
1960 LOCATE x*2+19,y*2+1:PRINT a$(x,y):a$(x,y)="*": yc=yc+1: SOUND 1,200,20,6,0,0,30
1970 RETURN
1980 IF az=0 THEN x=INT(RND(1)*9)+1
1990 LOCATE 1,21:PRINT"Hold on while I think out my answer
2000 LOCATE 1,22:PRINT
2010 LOCATE 1,23:PRINT
2020 IF az=0 THEN y=INT(RND(1)*9)+1
2030 FOR LP=1 TO 330: NEXT
2040 REM ** check if previous guess a hit **
2050 IF az=0 AND b$(x,y)="*" THEN 1980
2060 IF b$(x,y)<>"" AND b$(x,y)<>"*" THEN LL$=b$(x,y)
2070 IF az=0 AND b$(x,y)="" THEN LL$=b$(x,y): b$(x,y)="*": GOTO 2150
2080 IF az=0 AND b$(x,y)<>"" THEN b$(x,y)="*": LOCATE x*2+1,y*2+1:PRINT"*" : SOUND 1,20,20,7,0,0,10 : RETURN
2090 FOR p=1 TO 9: FOR q=1 TO 9
2100 IF b$(p,q)=LL$ THEN x=p: y=q: p=11: q=11: GOTO 2120
2110 NEXT q,p
2120 IF p=11 THEN az=0: GOTO 2150
2130 az=0: GOTO 2020
2140 RETURN
2150 LOCATE x*2+1,y*2+1:PRINT"*":zc=zc+1: SOUND 1,20,20,7,0,0,10 : RETURN
```


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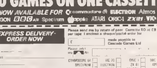
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Behind the screens

***Christina Erskine** talks to John Sutherland of Acorn Video*

Launched in a small flurry of publicity a few weeks back, Acorn Video — the new subsidiary of Acorn, set up to look at interactive video systems — has actually been planned for over two years

The company was formally established in October this year with John Sutherland at the helm. John was brought in as a part-time managing director on the strength of his considerable management and business experience — he was managing director of Marconi Radar for 14 years before taking early retirement.

"Before the company officially existed, we did a lot of research into the exact form Acorn Video should take," said John. "We talked to a lot of companies, users, educationalists, prior to getting going

Interactive video means connecting a standard videodisc player to a computer. Specially written software enables the computer to control the screen images. The user can select which frames of the video to show in which order

This technique had been used to good effect in some arcade games, notably *Dragon's Lair*, and Hitachi's *Golf Game* on MSX, when connected to video disc.

"Acorn felt that the potential market for interactive video was large enough to warrant setting up a separate company rather than developing the products within Acorn. It was partly also because our market is going to be very different from that which Acorn usually deals with.

"With Acorn Video, we are not selling to the home market. Our main selling area is to companies, for example, for training and educational applications.

Training videos being now largely commonplace, certainly in larger companies, I asked exactly how the interactive facility and the micro were going to fit in to the system already used

"The great strength of interaction is that you can fit the running of the video to the trainee's ability," explained John. "You can use menu-driven routines from the menu to interrupt the running of the video and ask the trainees if they understand what they have been shown, if they would like any parts repeated. It could test their understanding with a series of questions at the end of each section.

"Most importantly, it gives the facility to include sound, as in a commentary, with images with superimposed graphics. For example, say we have an interactive video showing how to change a car wheel. If the trainee keeps forgetting to tighten up the wheel nuts fully afterwards, one can add flashing arrows pointing to the wheel nuts at the right moment. One could even flash up words such as 'No stupid — you're still doing it wrong' if you really wanted to."

The Acorn system, which will be available before the end of the year, will be the first such dedicated system to be produced.

The basic system — based on BBC micro — will give the facility to include the interactive element, since many companies already have videodiscs in use. However the company is not ruling out the possibility of tailoring software to meet customers' needs

Already Acorn Video is negotiating with about 20 companies which are interested in its work, and two major industrial users are planning to take 50 interactive video systems on approval. John is certain that they'll not only want to keep them, but also order more

Two versions of the system are to be produced, one completely self-contained package — the so-called Delivery system — and one where it is possible for the operator to overwrite the software with commands, graphics or information of his or her own — the so-called Authorship system

Each package will consist of a modified BBC micro linked to a Philips Laservision video disc player. The BBC micro has a 'microtext-plus' processor, video synchronisation board and video command chip added internally and comes with a special Microvitec monitor, with the ability to present sound, text, image and graphics together. This is coupled to the Laservision laserdisc player controlled by a special *Acorn Author* software package

For the Authorship version of the video system, the above hardware is supplemented with an Acorn Bitstick and 6502 second processor, to enable new material to be written into the *Author* program. The complete system — as you would expect — is quite pricey. The basic training machine and software will cost around £3000. The more versatile Author version about £4000

John is also interested in selling the interactive video system as an educational aid to schools. "Obviously there is great potential to use the system in schools, and we may well implement a scheme whereby we can take in ordinary BBCs from the schools and adapt them to run the interactive video packages, but that isn't fully decided yet."

In the longer term, the company is also looking at the use of the system for sophisticated data retrieval.

"The possibilities of committing images, text and graphics to laserdisc are enormous. It would enable information that you would find in, for example, illustrated text books, much more flexible. It is now well accepted that works such as the Oxford English Dictionary are being computerised in a fairly conventional database form. There are other works which are ideally suited to presentation with interactive video. Gray's Anatomy, which is a standard medical textbook, is being put on to laserdisc. The implications of being able to use it in the same way as the interactive videos are obvious — it will be tremendously helpful to students. Another area where there seems to be vast potential is with geographical applications, where maps or charts can be enlarged, rescaled, where towns or even individual streets can be picked out and studied in detail."

Acorn Video is also planning to include the interactive video system as an option in Acorn's new ABC range of business micros with a separate machine, the AIVSD, containing all the interfaces, video command boards, special monitor, etc, in the one machine

To achieve all this, Acorn's newest company must expand from its present staff level of nine — and is planning to employ 25 people by the middle of next year

The Acorn Video team (left to right): Geoff Wood, John Sutherland and Michael Grove




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Touchdown

Program *American Football* **Price** £6.95 **Micro** Spectrum 48K **Supplier** Softstore, Suite 1, 39c Paddington Street London W1

Gee, just a month ago I was calling the plays in a single game of *Pro-Football* courtesy of Argus Press Software and now I'm coach for a whole season, with my sights set on the Superbowl. Channel Four sure have a lot to answer for!

Softstone's strategy game is similar to Addictive's perennial *Football Manager*. You choose teams, transfer players, arrange loans, then sit back and watch the game highlights.

One thing is immediately obvious — this is no simulation! Instead of having 48 players to choose from you have only 16, and team substitutions are further limited to only one prior to each game.

I was then annoyed to reach the Superbowl only to find I couldn't change my team at all for the big match. And a save routine is a must in a game like this, so why isn't there one?

The game scenes are jerkily animated by block graphics, which almost totally fail to capture the strategies of the sport, reducing it to 'Dropped Ball' or 'Touchdown'. The least said about the '3D' pitch markings the better.

After which, it may seem strange to admit that *American Football* can be quite fun as it works smoothly and quickly with nice sound, but I still can't help feeling that its subject could as easily have been Rugby or even Croquet.

John Minson

Evil eyes

Program *Styx* **Micro** Atmos **Price** £8.50 **Supplier** No Man's Land, 110 Bis av du General-Leclerc, 93500 Pantin, France

This has a familiar format. The enemy to be destroyed flutters around the screen, you have one weapon, the ubiquitous laser gun, and commands are Left, Right and Fire. Well, the games moves smoothly enough but there is nothing unusual in this *Invaders* type game.

In four screens you have to destroy the Eagles, Goblins and Evil Eyes, the Eyes being the most difficult to hit because of their habit of disappearing. The only significant difference to the three is their shape. They all flutter about randomly dropping bombs and floating mines which disappear if you shoot the randomly appearing Vulture.

The final screen is the magnificent 'Castle of Hell on the River Styx'. You can shoot away the defence, but you are continually harassed by a multitude of suicidal flying things, many of whom fall in battle before they have the sense to start bombing you.

The action is swift and smooth, and the first round of four screens not so difficult to complete, but after each round the attacks just get faster and faster. For arcade addicts only.

Vic Fielder

Bags of gold

Program *Castle Assault* **Price** £6.95 **Micro** Electron **Supplier** MRM Software, 17 Cross Coates Road, Grimsby DN34 4QH

When I read the cover of the cassette and looked at the very colourful picture, I was keen to get out the cassette, load up and enjoy what the picture and blurb persuaded me was to be an exciting, horrifying game.

Well, to be fair, if I'd looked more closely at the cover I'd have noticed a small picture of the 'real' screen picture and got a better idea of the game.

It's one of those jump-over-the-monsters — climb-the-ladders — over the moving platform — watch out for the flying ducks-type of game. If you can do all of that you are rewarded with bags of gold and bonus points.

I found it needed a great amount of either skill or co-ordination between forward movement and jump in order to get over the first level of meanies.

Once over these you climb a ladder and traverse a moving platform. You have to repeat this process three times before you reach the top of the castle and get the gold (provided you also miss the flying duck). It's a fairly interesting game and should keep newcomers to this type of game absorbed for a while.

Fred Short

Skelefons

Program *Fred* **Price** £6.95 **Micro** Commodore 64 **Supplier** Quicksilva, PO Box 6, Wimborne, Dorset.

Maze games are one of the most popular formats for arcade games. *Fred* from Quicksilva is one of the latest of this type to join the large number already available. The content of the game is much the same as usual, but the theme is perhaps a little different.

The setting is in the catacombs inside one of the ancient pyramids. You have to guide *Fred* round the maze-like passages, collecting the treasures and avoiding the hazards. These take the form of things like skeletons, mummies and something that looks like an animated chef's hat (but it is probably supposed to be a ghost). To escape from the maze you must find the bomb (there is one in every Egyptian pyramid of course!), and then you can blast your way out of one maze into the next one.

The action is reasonably tricky without being really challenging, but one thing is really very difficult, and that is finding your way out of the mazes. The graphics and sound are OK, but not really up to the best quality that can now be found on the Commodore 64. The game follows the usual and irritating Quicksilva standard of having its instructions separate from the rest of the game, making reference to them impossible after the game has loaded. This poor piece of design is compounded by the lack of any helpful details on the cassette insert.

Richard Corfield

High spec

Program *Assembler* **Price** £59 95 **Micro** QL **Supplier** Metacomco 26 Portland Street, Bristol.

This is the first assembler available for the QL and comes with a high specification — and a price to match

It has been converted from other 68000 machines, and has been compiled using BCPL, so is rather larger than the equivalent in machine-code would be It consists of two parts: a screen editor, for entering source code, and an assembler for converting it

On the standard 128K model of the QL, there is not enough room for both to be in memory at the same time which is a big nuisance In addition, the assembler is in three parts, loaded as overlays which slows down its operation somewhat

Both programs are loaded as multi tasking jobs using *Exec* or *Exec-E*, so you can, for example edit a file in one window while running a Basic program in another

The editor looks extremely good, using a user-definable window, with sensible use of the cursor keys to delete text in characters, word or lines, and for rapid movement around the file There are the usual sort of commands, such as *Search* and *Replace* and margin settings Unlike *Quill*, the editor uses standard Ascii notation and you can use it to edit anything else including Super-Basic programs It differs from *Quill* in two other ways — it is very much faster, as it doesn't use overlays and handles the microdrives properly, but it doesn't have any justification facilities, so true wordprocessing is not possible

The assembler consists of three overlays – the first is to set up options, the second is the work-horse for actual assembly, while the third is responsible for printing the error messages at the end of assembly The net result of the overlays is that it is a pretty slow process for small programs, though for larger ones the overlay loading time is small compared to the actual assembly time

The assembler itself has a very high specification, with many advanced features It supports Macros to ease code repetition, nested conditional assembly, various print-out options, and a Get facility for linking files together There is also the ability to externally reference labels for linking to other packages, but this is a little academic until something else appears with a compatible feature, such as a language compiler There are four assembler options which include automatic position-independent code, and relocatable code using a linker

Label names can have up to 30 significant characters, which I feel is rather an excessive quantity A smaller number, such as 16, would have increased assembly time while reducing storage requirements, with little restriction placed by the assembler

As position-independent code can be selected as automatic PC mode never has to be specified in an instruction, which is very useful, but if you should type in an instruction following the Motorola standard actually including PC, it gets rejected, which is very annoying

The 68008 has certain sets of similar instructions such as *CMP* which can exist in three different forms. *CMPA*, *CMPI* and *CMPM* It is normal for 68000 assemblers to work out which one is necessary from the following addressing modes, but unfortunately the Metacomco one falls down badly in this respect. No automatic conversion is done at all, which makes programming much slower than it should be

In my view, the editor is very nice indeed, but the assembler, while having many advanced features, does not conform to the standard on the simpler instructions.

The final factor to consider is the cost at £59 95 It is certainly a bargain compared to other 68000 systems, but it may be off-putting to many owners of a machine costing £400

Andrew Pennell

Redheaded

Program *Fire Rescue* **Price** £7 95 **Micro** MSX **Supplier** Kuma 12 Horseshoe Park Pangbourne Berks

Any new MSX user buying *Fire Rescue* is likely to be very disappointed It is not a good game

The screen consists of a cross-section of a building the five levels being connected by ladders. Your task as a sweet ginger-haired little girl (this I could identify with) is to rescue a teddy bear from each level by pulling him along and throwing him down a lift shaft

Rescuing all five teddies lowers a ground floor ladder to the basement, allowing you to escape and live to shuffle another day or to a harder screen. These involve avoiding fatal fireballs and so on.

This might keep the five-year-olds entertained for the afternoon, but is unlikely to hold the attention of anyone who has made it out of the sand-pit

Joanna Gorden

Gummed up

Program *Poster Paster* **Price** £5 95 **Micro** Commodore 64 **Supplier** Taskset, 13 High Street, Bridlington, York

It makes a refreshing change to come across a new program which is genuinely a bit different from the run of the mill computer game *Poster Paster* from Taskset is both different and very enjoyable

In this game you play the part of Bill Stickers (get it?) and your job is to paste posters on all the hoardings in town. You are supplied with a box of posters, paste, a brush and ladder Most of the posters are made up of several pieces which must be correctly positioned on the hoarding if they are to stick Trying to stop you are Gnurds Wazzocks and Drain Brains Contact with any of them is fatal, but you can destroy them by flicking paste on them.

There are 12 phases in the game, becoming progressively more difficult with larger and more complicated posters, and more numerous and persistent Wazzocks, Gnurds etc. Three skill levels are provided, but even at the easiest, it takes a little while to get the hang of it However, it is well worth the effort because the game is great fun and rapidly becomes very addictive

Richard Corfield

Dodgy motors

Program *New Wheels John?* **Price** £5.00 **Micro** Spectrum 48K **Supplier** Automata, 27 Highland Rd, Portsmouth, Hants.

This is the latest flight of fancy from the Automata stables, in which you can "wheel and deal, duck and dive, cut and shunt" in the Used Car trade. If you have ever enviously looked on as Arthur Daley neatly palms off some dodgy motor on an unsuspecting punter in yet another repeat of *Minder*, then this is the game for you.

In a nutshell, it is a business strategy game with a sense of humour. In a rather long opening sequence, you are given some initial capital, an overdraft, choice of trading premises, staff, opening times, and naturally, gender.

You go on to buy used cars at auction or from the trade and finally you wait in your shop for the punters to arrive. The punter will either ask for a particular make of car or state a particular price. It is up to you to have a varied enough stock to be able to make a sale.

The game is played day by day with the minimum playing time being a year. This takes several evenings to complete but the game allows you to save to tape, plus the option to dump the screen display of your stock to printer, allowing you to plan your wheeling and dealing overnight.

Make no mistake, *New Wheels* has some nice touches: visits from The Bill and neat end-of-the-month accounts, but in the end I found it repetitive and boring.

Having said that, if you are a whacky accountant looking for a game to while away the winter evenings, then look no further.

Joanna Gordon

Worthwhile

Program *Dbug* **Micro** Atmos **Price** £11.95 **Supplier** No Man's Land, 110 Bis av du General-Leclerc 93500 Pantin, France

Dbug is a machine-code monitor and de-bugging utility which includes a number of extra features making it one of the best available for the Oric/Atmos. The 30 commands fall into three categories, monitor, de-bug and system commands.

The monitor section has all the usual facilities to enter and display hexadecimal bytes, and the *Evaluate* command gives the sum and difference of two numbers in both hex and decimal as well as simple conversion. Using copy memory and compare memory commands it is easy to transfer and modify existing code. The find command searches for a string of up to eight bytes and will search all 64K of memory in less than three seconds!

System commands control the screen which can be set to *Hires* or *Text* and the *Ink* colour can be changed. The *Line* command limits the number of lines on the screen that are scrolled enabling a window to be left at the top.

Finally the de-bugging facilities offered allow for ten break points, register display and modification and single stepping through a program. This last feature is especially useful and can be set to execute every instruction or to ignore any JSR's. At each step the internal registers are displayed.

Anyone writing or learning 6502 machine code will find *Dbug* a worthwhile aid.

Vic Fielder

Cross-eyed

Program *Gauntlet* **Price** £6.95 **Micro** Spectron **Supplier** Micro Power, 15 Sheepscar Street South, Leeds LS7 1AD

It seems that lately it has been too easy when reviewing a supposed new game to be able to divulge that far from being new it is really an old one, renamed. Well yes, *Gauntlet* is the BBC version of *Planetoid* but this time I'm quite "over the moon". If there is, as it would seem, nothing new then let's have the good old ones back.

Gauntlet is a chance to fly, at high speed, across an alien planet and literally run the gauntlet. You fly your X15 over the desolate landscape to protect the Cannisters from the attacking forces of Landers who follow the shape of the landscape in search of Cannisters. If a Lander grabs a Cannister and succeeds in carrying it to the top of the screen it turns into a Mutant.

To help with all the action you have on board your craft a laser gun of devastating power, a smart bomb to blast everything in sight, a hyperspace button to get you out of tricky situations, and forward and reverse motion.

Points are awarded for shooting/blasting a list of ten various enemy objects ranging from a Lander for ten points to Cannisters for 80 points.

I liked the high speed flying and fast action laser shooting, but went cross-eyed watching a radar screen version of the scene at the top of the screen.

The deceptively simple screen lay out belies a complicated full of action game which I for one have spent many hours enjoying.

Fred Short

Time for bed

Program *The Magic Roundabout* **Price** £6.95 **Micro** Spectrum 48K **Supplier** CRL Group.

Do today's children still watch *The Magic Roundabout*? CRL think so enough to bring out this game, and not before time. After all, Dougal the dog is as big a hero as all the Willys and Wallys put together.

Here Dougal is also a sprite though, moving among lots of other sprites in the Magic Garden. He is trying to build a house of sugar lumps before bedtime, but he has to keep eating the sweet stuff to keep his strength up.

Meanwhile Florence, Brian and his other friends cause fatal collisions unless they are driven off by his bark. Does this all sound a good idea? Well it is, but it's not been given the treatment it deserves.

Without any sort of 'radar' it is difficult to locate off-screen sugar but the deadly crashes occur too easily. Often it is impossible to escape from these until soon all three lives are gone.

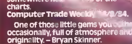
Colour choice is not desparately clear and the sound is a great disappointment, with not even a hint of the *Magic Roundabout* music. If this game is intended for younger players it will easily frustrate them. It isn't even clear where you start building the house!

One nice touch though: each game ends with Zebedee saying "Time for bed". Pity there wasn't more time for development before that though.

John Minson

Storm Warrior leads the pack

Reviews



I recommended Storm Warrior and expect it to settle somewhere near the top of the charts.
Computer Trade Weekly [illegible]4/9/84.

One of those little gems you come across occasionally, full of atmosphere and originality. – Bryan Skinner.
Personal Computer News 22/9/84.

Lots of original thought, playable as well as challenging. We have here – amazingly – a new concept. I don't think anyone will bore with this one quickly. – Bob Wade, Samantha Hemens and Chris Anderson.
Personal Computer Games November 1984.

This warrior should brew up a storm amongst games players everywhere. Definitely worth buying.
Computer & Video Games November 1984.

This game's superb sound, graphics and fighting sequences set it well above the others.
Personal Computer World November 1984.



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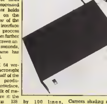
Hardware Review

Digital vision

Hardware *Microsight 1* **Micro** Commodore 64 **Price** £500 **Supplier** Digithurst, 20 Leader Hill, Orwell, Royston, Herts SG8 5QH

If you ever need to copy an image of a real object to the screen of a Commodore 64, then there is a new peripheral available that could be the answer to a prayer. The Microsight 1 system from Digithurst comprises of a video camera, interface and software that can transfer the output of the camera to the high-resolution screen. The system is not cheap, however, costing £500 or about £350 without the camera.

On receipt of a reset signal from the computer the Microeye interface begins the digitising process. For each incoming line of video a sample of the brightness level is converted to a parallel signal and passed to the computer's user port. Initially the left-most pixel is read, so after a screenful of lines have been processed the computer holds information on the left-hand row of the screen. The interface repeats the process for pixels from further across the screen until, after five seconds, a whole frame has been stored.



The CBM 64 version of Microsight uses about half of the information produced by the interface, and takes 12k of memory to store it: the resolution is 128 by 100 lines, with 16 levels of brightness. There are two display modes, with a third promised: the first gives a small binary image to help set up the camera, while the full screen mode provides four shades with the aid of bit image techniques. Unfortunately, only 256 of the 320 pixels available are employed, which leaves a black bar right of frame. The final option will use the multicolour mode.

The results I obtained were varied; if sufficient time was spent adjusting lighting and two variables, Threshold and Brightness, then the pictures could be impressive. Camera shading made adjustments even trickier. I had limited success capturing still frames from a VCR, the interface only decodes about 60% of the picture.

The software provided was still at the prototype stage: a printer dump for Epsom printers was included, and a save option and export routine to pass the screen to a graphics program, are promised. Well-heeled CBM 64 owners who use their machine for complex graphics applications will find the Microsight 1 opens up some intriguing possibilities.

Jeff Naylor

Interface

Hardware *Turboprint/GT* **Micro** Commodore 64 and VIC 20 **Price** £65 (optional 16k buffer £65) **Distributor** Norbrain Micro Ltd, Boulton Rd., Reading, Berkshire

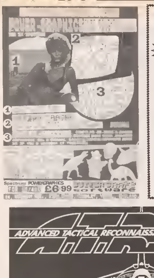
Hot on the heels of the Micrografix printer interface for the Commodore home computers (reviewed *PCW* No 36) comes the Turboprint/GT from the American manufacturer Telesays. Offering the ability to print text on any printer having the almost universal Centronics input and all the Commodore graphic characters to most dot-matrix printers, Turboprint/GT takes advantage of a gap left in the market by Commodore.

Anyone owning a Commodore computer and having access to a non-Commodore printer, at work, at school, or somewhere else, will know the frustration of the lack of a standard printer output on the C64/VIC 20. Turboprint/GT gets over this problem in a sophisticated yet very practical way. The interface plugs unto the Commodore serial port (on the computer or the disk drive) at one end, just like a Commodore printer, and outputs through a full 36-pin Amphenol (Centronics) plug at the other. In between sits a neat box housing its own 6502 processor, Rom, and communications electronics.

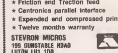
Perhaps the most vital part here is the Rom. It is this which lets the interface drive almost any dot-matrix printer and produce the special graphic characters. Just select between the built-in options using some nifty DIP switches, plug the interface in and forget it. Turboprint/GT takes no Ram but by sending commands by software you can choose one of a number of print modes, including Commodore-copycat, universal-printer, and special-lister (my descriptions). These let you use your printer as if it were a Commodore printer, let you use any special facilities built into your particular printer, and to list out programs with all the graphic characters replaced automatically by readable equivalents.

Printout is clear but a little on the slow side if the optional buffer is not used. The interface is compatible with most (possibly all) commercial software, although a little care may be needed to set up the interface correctly before running the software to get the best out of it. I bed trouble using the test interface with Compunet which may indicate a possible weakness in timing. I was not using the optional buffer. The documentation, which includes a program for producing a high-resolution screen dump, is good in parts but could be made much clearer in others, particularly for a user not already familiar with Commodore printers and the facilities available. One last problem, the version which I used had only one significant fault, it would not print a £ sign. Otherwise a good product.

John Cochrane


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Beating the system

You can beat the system with this housekeeping utility by
Malcolm Daviaon

One of the weaker points of the QL is its rather ponderous operating system. Expressions such as:

Delete Mdv2—Name—Fill
Copy Mdv1—Name—Fill to Mdv2—Name—Fill

All this to overwrite a previous backup file on the other Microdrive! Then again, if you want to list your Microdrive file directory to a printer:

Baud 1200 Open#5 "Sere" Dir #5, 'mdv1

As a result of struggling with QDOS, occasionally mistyping when trying to do my backups at the end of a long tiring programming session, I decided that I would have to write a program to handle the more usual operations in the simplest way I could devise I hope its length will not deter you from giving it a try

The first and only demand the program makes on the user is that the 'master file', whose file directory you wish to examine or that requires file deletion, or contains the files that you wish to copy is resident in *Mdv1*

The system allocates a number to each file on the directory which can be scrolled on the screen with the number adjacent to the file name and what's more, the display can be paused, and restarted whenever you like or you can return to the menu at any point during the scrolling You simply note the numbers on the files say those you wish to delete, and having selected either the delete or copy option, entering the numbers is all that is required to complete the operation. The file name is displayed before the operation proceeds and there is a chance to pull out if you have selected the wrong number

I decided against allowing copying into the master file for the very simple reason that mistakes were less likely if you physically have to switch the cartridges and *Run* the program again, besides, in practice, housekeeping operations are normally only 'one way' So it is best to keep a copy of the program resident on all your Microdrive cartridges

The program's coding makes use of windows, which make programming very tortuous, but in return for the effort make business programs appear very slick, so that you can, for example, display text and an index in separate scrolling windows Channel numbers which are assigned to each window and peripheral device, have to be quoted for every *Print Ink, Paper* or *Cls* statement The following are the channel numbers used in the program.

Channel #5 Serial printer port
Channel #6 *Mdv1* file called *Direct*
Channel #7 Heading window block
Channel #8 Remaining screen window

The windows are defined in the procedure *windset*, the size, channel numbers, ink and paper colours are assigned, and the windows individually cleared.

The directory of files is first stored to a temporary Microdrive file called *direct* The procedure *look* is then used to load a string array, once the names are stored in the array and the Microdrive file is deleted.

```
500 REMark
510 REMark LOAD ARRAY WITH DIRECTORY OF MDV1
520 REMark
530 DIM files$(200,30)
535 windset
540 OPEN_NEW £6,'mdv1_direct'
550 DIR £6!'mdv1_'
560 CLOSE £6
570 look
575 menu
580 DEFine PROCedure look
590 OPEN £6,'mdv1_direct'
600 INPUT £6,b$,b$
610 LET count=1
620 REPeat loop
640 INPUT £6,b$
645 IF b$<>'direct' THEN
650 LET files$(count)=b$
660 LET count=count+1:END IF
665 IF EOF(£6):EXIT loop:END IF
670 END REPeat loop
680 CLOSE £6'DELETE 'mdv1_direct'
690 END DEFine look
700 REMark
710 REMark ***************
720 REMark
1000 REMark SET UP HEADING BLOCK
1010 DEFine PROCedure windset
1020 OPEN £7,con_512x51a0x0
1030 PAPER £7,4:CLS £7
1040 INK £7,0:CLS £7
1050 REMark SET UP LOWER AREA OF SCREEN
1060 OPEN £8,con_512x203a0x51
1070 PAPER£8,7:INK £8,0:CLS £8
1080 END DEFine windset
1090 REMark
1100 REMark *****************
1110 REMark
3000 DEFine PROCedure menu
3010 REPeat loop3
3015 CLS £7:CLS £8
3020 CSIZE £7,2,1:CURSOR £7,40,20:PRINT £7,,'
QL UTILITIES PROGRAM"
3030 AT £8,5,5
3040 PRINT £8,,,,"1        List Directory for
MDV1"
3050 PRINT £8:PRINT £8,,,,"2 Print Directory
of MDV1"
3060 PRINT £8:PRINT £8,,,,"3 Delete a file on
MDV1"
3070 PRINT £8:PRINT £8,,,,"4 Copy a file from
MDV1 to MDV2"
3075 PRINT £8:PRINT £8,,,,"5        Exit"
3080 PRINT £8
3085 LET n$=INKEY$:IF CODE(n$)=0 THEN GO TO
3085
3086 numeric:IF l<>c THEN GO TO 3085
3087 IF n$>"0" AND n$<"6" THEN LET a=n$
3088 ELSE LET a=8 :END IF
3090 SELect ON a
3100 ON a=1:filelist
3110 ON a=2:write
3120 ON a=3:del
3130 ON a=4:copyfile
3135 ON a=5:CLS £8:CLS £7:STOP
3140 END SELect
3150 END REPeat loop3
3160 END DEFine menu
3170 REMark
3180 REMark ********************
3190 REMark
4000 DEFine PROCedure filelist
4010 CLS £7:CLS £8
4020 CSIZE £7,2,1:CURSOR £7,40,20:PRINT £7,
"Directory of MDV1_"
4030 CURSOR £7,300,25:CSIZE £7,0,0
4035 PRINT £7,"Hit any key to pause - or
<ESCAPE>"
4040 FOR a=1 TO count-1
4060 PRINT £8,,a,files$(a)
4065 LET a$=INKEY$:IF CODE(a$)=27 THEN RETurn
4070 IF CODE(a$)>0:try
4080 CURSOR £7,300,25:CSIZE £7,0,0
4090 PRINT £7,"Hit any key to pause - or
<ESCAPE>":END IF
4100 END FOR a
4110 CURSOR £7,300,25:PRINT £7,"Hit any key
```

The procedure *menu* then handles procedure calling, subject to the user's selection. The *Select On* command usefully handles the conditional selection of the four procedures and an exit option.

The procedure *filelist*, not only lists the contents of the array alongside the number of the file, but it also calls a pause routine called *try*, which causes a continuous loop within *loop2* until a second key depression is detected by the *inkey$* command. The use of the *escape* key is only operational when the directory is scrolling and causes an early return to the menu

The *write* procedure opens the printer channel and dumps the directory onto the printer, but without the assigned file numbers.

The *del* procedure, similar to the *copyfile* procedure, requests the file number displays the file name, and on receipt of a confirming Y, proceeds with the file operation. Note that when copying a file to *Mdv2* it deletes a file of the same name whether one exists or not, the reason being that if a file of the same name existed it would prevent the *Copy* from being put into effect. An alternate, but long winded, way would be to dump the file names on *Mdv2* to a file, checking for its presence and giving the user an option to abort the option. On the grounds that he wouldn't be doing it if he didn't mean it, I opted for the simplest solution, of overwrite and be damned.

Save the program by typing ssave You can run it by typing *Lrun Mdv1Dire* After a delay of twenty seconds or so you can take the list to screen option on the menu, make a note of the file numbers and select the relevant operations you wish to tackle The directory scroll and pause facility is a pleasure to use after QDOS

It takes a little while for a user of Sinclair Basic, or any other form of Basic to get used to the idea of 'coercion' You will find it practised in this program, on lines 3067 and 6025 While it has its advantages in obviating the use of *Strs* and *Val* statements, it causes a new problem with *Input* statements Although you may specify a numeric input variable, SuperBasic will allow the input of non-numeric data, so you have to provide a numeric check routine to prevent the program crashing, so in terms of coding length, you are worse off!

While writing programs in SuperBasic you will frequently be wanting to save and list your 'baby' This can become very tiresome if you type the command in each time I include the procedures called *'ssve* and *'list'* I used for the development of the program above You may have to amend the baud rate and the *Open* command to suit your own printer configuration.

Another custom amendment is to change the colour of the screened program listing, the black lettering on white is too glaring on a monochrome monitor, so the procedure screen improves this situation. Channel #2 is the program listing window, and channel #1 is the program output window.

When typing in the listing, remember to replace '£' with '$'

```
to continue
4120 LET a$=INKEY$:IF a$="" THEN GO TO 4120
4130 CLS £8
4140 END DEFine filelist
4150 DEFine PROCedure try
4160 CURSOR £7,300,25:CSIZE £7,0,0
4170 PRINT £7,"Hit any key to conti  ie
4180 REPeat loop2
4190 IF CODE(INKEY$)>0:EXIT loop2:END IF
4200 END REPeat loop2
4210 END DEFine try
4220 REMark
4230 REMark ********************
4240 REMark
5000 DEFine PROCedure write
5010 BAUD 1200:OPEN£5;'SERIE'
5020 DIR £5;'mdv1_'
5030 END DEFine write
5035 CLS £8
5040 REMark
5050 REMark ********************
5060 REMark
6000 DEFine PROCedure del
6010 CLS £8:CURSOR £8;5,40
6020 INPUT £8;,,, "ENTER NUMBER OF FILE TO BE DELETED : ";n$
6022 numeric:IF l<>c THEN GO TO 6010
6025 LET n=n$: IF n>count OR n<0 THEN GO TO 6010
6030 LET a$=files$(n)
6035 IF a$="" THEN GO TO 6010
6037 LET a$=a$(1 TO LEN(a$))
6040 PRINT £8.PRINT £8,,,," PRESS Y IF THE FILE NAME IS  ";a$
6050 LET s$=INKEY$:IF CODE(s$)=0 THEN GO TO 6050
6060 IF s$="Y" OR s$="y" THEN
6065 LET files$(n)=""
6070 DELETE 'mdv1_'&a$
6074 CLS £8:IF n=count-1 THEN count=count-1
6076 END IF
6077 CLS £8
6080 END DEFine del
6090 REMark
6100 REMark ********************
6110 REMark
7000 DEFine PROCedure copyfile
7005 CLS £8:CURSOR £8;5,40
7010 INPUT £8;,,, "ENTER NUMBER OF FILE TO BE COPIED : ";n$
7012 numeric:IF l<>c THEN GO TO 7005
7015 LET n=n$:IF n>count OR n<0 THEN GO TO 7005
7020 LET a$=files$(n)
7025 IF a$="" THEN GO TO 7005
7027 LET a$=a$(1 TO LEN(a$))
7030 PRINT £8:PRINT £8,,,," PRESS   IF THE FILE NAME IS  ";a$
7040 LET s$=INKEY$:IF CODE(s$)=0 THEN GO TO 7040
7050 IF s$="Y" OR s$="y" THEN
7060 DELETE 'mdv2_'&a$:COPY 'mdv1_ &a$ TO mdv2_ &a$ 7070 END IF
7080 CLS £8:END DEFine copyfile
8000 REMark
8010 REMark ********************
8020 REMark
8030 DEFine PROCedure numeric
8040 LET l=LEN(n$):LET c=0
8050 FOR a=1 TO l
8060 IF n$(a)INSTR"1234567890" THEN LET c=c+1
8070 END FOR a
8080 END DEFine numeric
8090 REMark
8100 REMark ******************
8110 REMark
9000 DEFine PROCedure llist
9010 BAUD 1200:OPEN£5;"SERIE":LIST £5:END DEFine
9040 DEFine PROCedure ssave
9050 DELETE 'mdv1_dire':SAVE 'mdv1_dire':END DEFine
9060 DEFine PROCedure screen
9070 PAPER £2,2:INK £2,6:CLS £2
9080 END DEFine screen
```



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POP126

A moving introduction

Animate your loading screens on he Spectrum 48K with some help from **Tony Dexter**

Most games we buy give us a pretty picture to watch while the main code is loaded from cassette to micro. The Spectrum's *Screen$* facility makes it an easy task to save and re-load a full screen picture for this purpose and the process has been frequently described. What is not generally known is a technique whereby a degree of animation can be given to these loading pictures.

The method uses the Attribute file, and the *Flash* function. When *Flash* is set to 1, or switched on, then any particular character will alternate between the *Paper* and *Ink* colours giving a flashing effect. We can cunningly use this mechanism to build movement into our pictures.

The basic idea can be understood if we think of a single character square in the centre of the square set to, say, *Ink 1* (blue) and *Paper 6* (yellow) with all the surrounding squares set to *Ink 6 Paper 6*. If *Flash* is on, then a blue square will repeatedly appear and disappear, but since *Ink* and *Paper* colours are the same for the background area it will not be apparent that the whole screen is flashing.

If we now change the attributes of an adjacent character square to *Ink 6, Paper 1* we will find that our little square no longer appears and disappears — it now jumps from one position to another.

It is from this simple idea that we can go on to create quite elaborate effects. We are limited of course, since we can only use the Attribute file. All our designs must be built up from full character spaces *(Chr$ 32)*. In fact we will be building two different screens, one made up of solid *Paper* coloured squares, the other of *Ink* coloured squares. This means that the actual design will be somewhat stylised, but can be effective for all that.

If you type in the *Data* lines 10 to 80 and lines 500 and 510 and *Run*, you will see the method applied to lettering. One word of a title will change to another. Type in and *Run* the full listing and you will see the full possibilities of Colour change, Shape change and Movement which this technique offers.

The design should be planned as two separate pictures. The easiest way is to plan Picture One on squared paper using coloured pens, making a note that all colours on Picture One are *Paper* colours.

Picture Two is similarly planned, but in this case all colours are *Ink* colours. If the two pictures are now compared, character square by character square, we have an *Ink* colour and a *Paper* colour for each square. Any square which is to alter will have a different *Paper* and *Ink* colour. Any square which is common to both Pictures One and Two will have the same *Ink* and *Paper* colours.

You can actually put your design on screen by a long series of *Print* statements, or use one of the published or commercially available graphic design programs. Your finished picture should not be *Saved* with *Screen$* since this *Saves* both the Display file and the Attribute file and we are here only concerned with the Attribute file.

Save by *Save "name" Code 22528, 768*, and load by *Load "name" Code 22528*.

This gives us an additional bonus in that the loading time is quite noticeably reduced. A full screen picture saved by this method will reload in something like five seconds, while *Screen$* takes around 45 seconds.

If we do not mind losing this speed advantage we can combine conventional screen design with the new method. Our animated area can be limited to a part or window of the screen. This area will use attribute design and each square set to *Flash 1*. The rest of the screen can be drawn to pixel definition in the usual manner, with *Flash 0*. In this way we can have a detailed picture, with a less detailed portion animated. Since the Display file must now also be saved we use *Save "name" Screen$*.

This technique offers great possibilities for experiment, the results being most rewarding.

```
  1 REM EXAMPLE OF AN ANIMATED LOADING SCREEN.
  2 REM ENTER THE PROGRAM LINES AND THEN RUN THE PROGRAM.
  3 REM THE RESULTING SCREEN CAN BE SAVED BY:- SAVE "picture"CODE 22528,768
  4 REM THE PICTURE WILL LOAD BACK IN 5 SECS BY :- LOAD ""CODE22528
 10 DATA 191,191,186,186,186,191,186,191,191,130,191,186,191,130,135,135,191
,130
 20 DATA 135,130,186,130,135,186,186,186,191,186,186,186,191,191,191,191,186
 30 DATA 191,186,191,186,186,191,130,191,186,191,130,186,135,186,130,191,130
,191,130
 40 DATA 191,135,186,191,191,186,191,191,191,191,191,191,186,186,186,191,186
,191,186
 50 DATA 130,191,186,191,130,191,130,191,130,135,130,186,130,191,135,186,191
,191
 60 DATA 186,186,191,191,191,191,191,186,191,186,191,186,191,191,130,135,130
 70 DATA 191,130,135,135,191,130,191,130,191,130,135,191,186,191,191,186,186
 80 DATA 186,191,191
 90 DATA 164,164,161,161,161,161,161,161,164,164,164,164,164,164,161,161,161
,161
 100 DATA 161,161,161,161,164,164,164,164,164,161,161,161,161,161,161,161,161
 110 DATA 164,166,166,166,161,161,137,137,137,137,137,137,161,161,166,166,166 ,164
```

```
120 DATA 140,140,140,140,140,140,140,140,164,164,161,161,164,140,142,142,142
130 DATA 142,142,142,140,140,180,177,177,140,140,136,136,142,142,136,136,140
,140
140 DATA 180,177,177,164,164,135,135,182,182,135,135,164,164,164,177,177,164
,182,191,128,182,182,191,128,182,164
150 DATA 164,137,137,164,182,182,182,182,182,182,182,182,164,164,137,137,164
,182,182,178,182,182
160 DATA 178,182,182,164,164,137,137,164,164,182,182,146,146,182,182,164,164
,164
170 DATA 137,137,164,164,182,182,182,182,182,182,164,164,164,137,137,164,164
180 DATA 164,164,182,182,164,164,164,164,164,137,137,164,137,137,137,137,137
190 DATA 137,137,137,164,164,137,137,137,137,137,137,137,137,137,137,137,137
200 DATA 137,137,137,137,137,137,137,137,137,137,137,137,137
210 DATA 137,137,137,137,137,137,137,137,137,137,137,137,137
220 DATA 164,164,164
499
500 RESTORE : PAPER 4: INK 4: FLASH 1: CLS
510 FOR i=22528 TO 22655: READ a: POKE i,a: NEXT i
520 FOR i=22667 TO 23211 STEP 32: FOR j=0 TO 12: READ a: POKE i+j,a: NEXT j:
NEXT i
```



MUSIC MICRO PLEASE!!









LVL's





One-button wonder

Speed up your inputs on the BBC B with Keywords,
by ***Richard Snowdon***

This program provides a keyword system — similar to the Electron's — on the BBC micro. It does not just insert the keyword token, it prints the whole keyword onto the screen as well as inserting it into the keyboard buffer.

Twenty-six keywords are provided, pre-set to ones which I think are most useful, but they can be changed to suit your programming needs. If creating a graphics program, store all the graphics commands, eg, *Plot*, *Colour*, *Draw*, *Mode* etc, or, if creating a text program which requires string manipulation store the appropriate commands, eg, *Mid$*, *Left$*, *Right$*, *Len* etc.

The keywords are produced simply by holding down the TAB key while pressing a letter key A to Z. It may be useful when defining keys in the editor, to pick sensible keys, such as *S* for *Save* and *M* for *Mode*.

The keyword system occupies no user Ram as it is all interrupt driven machine code which can be stored at *&D00* or *&900* on a disc system. These areas are not used for Basic program storage. The program includes the editor and the assembly language keyword system.

Once running, you can edit the pre-set keywords until the required subset is obtained and then *Quit* the editor, to install the keyword system. When the program stops, you can type *New*, (or *Tab N* which should give *New*) and load your own programs, as the editor program plays no part in the keyword systems' operation. (Don't worry the keywords will still function.)

If you save the actual machine code routine (as instructed when the editor program is run) the next time you turn on your BBC micro and need the keywords system, you needn't load the editor program, you can just load the M/C and call it.

**Load"programme" D00* (on a tape system)
Call&D00
or
**Load"programme" 900* (on a disc system)
Call&900

More details are given when the program is run.

The system saves a considerable amount of time, and can be extended to provide 66 keywords, but that would disable the function keys and also as the ZX Spectrum has proved, lose its natural ease of operation.

```
10REM BBC B Keywords
20REM by Richard Snowdon. *SnowSoft*
30ON ERROR VDU3,12 RUN
40DIM SE 60
50BASIC=&D07
60IF?BASIC 65 BASIC=&900D
70P=&D00
80PAGE CLEAR PROCDISC
90FOR X=0TO2STEP2
100P%=SE
110[OPT X
120 .A
130LDY#&FF LDA(&71),Y CMP#&70
140BEQ FS LDA&71 CLC
150ADC#1 STA&71 LDA&72
160ADC#0 STA&72 CMP#(BASIC DIV256)+3
170BNE FA RTS
180 .FS
190LDY LDA(&71),Y CMP#12
200BMI FS INY
210 .FS1
220INY LDA(&71),Y CMP#&7A
230BEQ FE CMP#&FF JMP FA1
240 .FE RTS
250]
260NEXT
270FOR X=0 TO 2
280READ A
290 P=&E2+X?A
300NEXT
310ONCODE#
320VDU23 ...  0 0 12 0 0 0
330PROCCHANGE
340FOR X=0TO2STEP2
350P%=P
360[OPT X
370CLC ... MOD256 STA&220
380CLC ... DIV256 STA&221
390LDA#21
400LDX#0
410LDY#0
420JSR&FFF4
430LDA#14
440LDX#2
450JSR&FFF4
460RTS
470 .SP
480PHP PHA TYA AND#223 TAY PLA
490STY P+&D2 CPY#65 BMI F CPY#91 BPL F
500STY P+&D2 PHA TXA PHA TYA PHA
510LDA#159
520LDX#129
530LDY#255
540JSR&FFF4
550CPY#255
560BNE F1
570JSR ST
580PLA PLA PLA PLP PLA TAY PLA TAX PLA
590LDA#0 PHA
600TXA PHA TYA PHA RTS
610 .F1
620PLA TAY PLA TAX PLA
630 .F
640PLP RTS
650 .ST
660LDA P+&D2 SEC SBC#65 TAY LDA P+&E3,Y
670STA P+&D2 LDA#BASIC DIV256 STA&71
680LDA#BASIC MOD256 STA&70 LDY#0
690 .S
700LDA(&70),Y CMP P+&E2 BEQ A INY BNE S
710JSR ADD LDA&71 BNE S RTS
720 .A
730DEY CPY#&FF BNE B JSR SUB
740 .B
750LDA(&70),Y CMP#12 BMI A
760 .C
770INY INY BNE D JSR ADD
780 .D
790LDA(&70),Y CMP P+&E2 BEQ E STY P+&D4
800TAY LDX#0 LDA#138 JSR&FFF4 LDY P+&D3
810INY BNE RE JSR ADD LDY#0
820 .RE
830JMP D
840 .E
850RTS
860 .ADD
870LDA&71 CLC ADC#1 STA&71 RTS
880 .SUB
890LDA&71 SEC SBC#1 STA&71 RTS
900]
910NEXT
920*FX21
930*OPT
940IF P=&D00 A$="" ELSE A$="*KEY10 CALL&D"+STR$~P+"|M"+CHR$13
950FOR A=1TOLEN A$
960Y%=ASC(MID$(A$,A,1))
970X%=0
980A%=138
990CALL&FFF4
1000NEXT
1010CALL P
1020CLS
1030PROC
1040PRINT"Keyword system now functioning"
1050PROC_N
1060PRINT"  Hold the TAB key down while pressing anykey from A - Z to obtain keyword"
1070PRINTSTRING$(40,"-")
1080PRINT"You can load these keywords with *LOAD " 0" "P" and start the keyword system with " >CALL&0";"P
1090PRINTSTRING$(40,"-")
1100PRINT'' Type in the following after a hard reset to retain the keyword system """ >CALL&0 "P
1110REPEAT Y=Y+1
1120VDU19 0 Y 0
1130UNTIL Y=12
1140END
1150DATA&C6 &F6 &D7 &DF &E2 &FB &A5 &DD,&A6,&F_,&E1 &E? &EB &CA,&CB,&F1 &F9,&LL,&CD,&DA,&FD &EF &F0 &E? &F5 &D4
1160DEF PROCDISC
1170PRINT'' Do you have a disc interface installed (Y/N)
1180PROCYN
1190IFA=78 ENDPROC
1200PRINT' Do you want to use the ' USER DEFINED CHARACTERS' or the ' USER DEFINED KEYS (C/K)
1210A=GETAND223
1220IFA 75 ANDA 67 THEN1210
1230PRINT Do not define any
1240IFA=75 P=&C00 PRINT characters
1250IFA=67 P=&B00 PRINT keys
1260PRINT ' Everything OK (Y/N)
```

```
[illegible]DEF [illegible]YN
[illegible] F-310 [illegible]
[illegible]ENDPROC
[illegible]DEF PROC[illegible]
[illegible]
[illegible]PROCSET
[illegible]REPEAT [illegible]
[illegible]IFINKEY-56 [illegible] PROCSET
[illegible]PRINTTAB([illegible]
[illegible]IFINKEY[illegible] ANDY[illegible]
[illegible]IFINKEY-[illegible] ANDY [illegible] Y+1
[illegible]IF INKEY[illegible] THEN [illegible]SAVE [illegible]
[illegible]IFINKEY [illegible]
[illegible]
[illegible]PRINTTAB[illegible]
[illegible]
[illegible]TIME [illegible]
[illegible] UNTIL TIME [illegible] ORINKEY-3[illegible] OR INKEY [illegible]
[illegible] INKEY-5[illegible]
[illegible]UNTIL INKEY-3[illegible] OR INKEY-17 ORINKEY-[illegible]
[illegible]IFINKEY [illegible] ENDPROC
[illegible]REPEAT UNTIL INKEY 129
[illegible]
[illegible]PRINTTAB[illegible] STRING$(30, [illegible]
[illegible]
[illegible]INPUT [illegible]A$
[illegible]
[illegible]OR [illegible]-1TOLENA$
[illegible]A$=[illegible]HR$(ASC(MID$(A$,[illegible]))AND[illegible])
1550NE[illegible] I A$ [illegible]
15[illegible]IFLENA$ [illegible] REPEATUNTILNOTINKEY-74.[illegible]
1570PRINTTAB([illegible] PLEASE WAIT
15[illegible] ASC LEFT$(A$ [illegible])
1590[illegible]BASIC
1600IF[illegible]
1610[illegible] FALSE
1620IF [illegible]
1630IF [illegible] PRINTTAB(1,Y) [illegible] STRING$(30, [illegible] TAB
[illegible] Y) A$ [illegible]
1640[illegible]+1
1650IF [illegible]BASIC+&300 THEN1610
1660GOTO1320
1670DEF PRO[illegible]
1680E=TRUE
1690FORZ=1TOLENE$
1700IF [illegible]
1710NEXT
1720IF [illegible]=FALSE
1730IF[illegible]
1740ENDPROC
1750DEFPROC[illegible]COLOUR1[illegible]COLOUR0 ENDPROC
1760DEFPROC[illegible] COLOUR1 COLOUR128 ENDPROC
1770DEF PROCYN
1780A=GETAND223
1790IFA=89 PRINTTAB(POS VPOS) [illegible]Y
1800IFA=78 PRINTTAB(POS VPOS) [illegible]No
1810ENDPROC
1820DEF PROCSET
1830CLS PROC1
1840PRINT" UP ARROW-up DOWN ARROW down
[illegible] SHIFT -quick [illegible] C -quit
1850PROCN
1860IFP% TRUE VDU[illegible]
1870FORX=2TO27
1880 &71=(BASIC MOD 256)+1
1890?&72=(BASIC DIV 256)-1
1900PRINTCHR$(63+ [illegible]
1910?&70=?(P+&E1+[illegible])
1920CALL &E
1930PRINT
1940NEXT
1950VDU31 0 20 PROC1 VDU[illegible]
1960PRINT [illegible]input a different keyword [illegible] S [illegible]Save keywords routine [illegible] F [illegible]Copy keywords on [illegible] TAB(13) Snowsoft 1984[illegible]".
1970PROCN
1980ENDPROC
1990DEF PROCSAVE
2000CLS
2010INPUT [illegible]Filename [illegible]FILE$
2020IF LEN(FILE$)>10 THEN GOTO 2010
2030 IF P=&D0[illegible] THEN *SAVE FILE$ [illegible]
2040IF P=&8[illegible] THEN *SAVE FILE$ [illegible]
2050IF P=&C0[illegible] THEN *SAVE FILE$ [illegible]
2060END PROC
```



"They didn't."
"Didn't what?"
"They didn't say nothing like."
"Say what?"
"That there game we was just talkin' about. They just said 'Watch this space' again, didn't say nothin'."
"Ah. Clever that. That's the 'Penguin Technique'."
"Penguin Tech, tick, tick ... what's that then?"
"Well, that's when you do it in black and white and leave 'em on ice."
"What, like tell 'em no more you mean?"
"Precisely."
"What nothin'? Not even who it's by, the price, nothing?"
"Nope, nothing."
"Not even a clue it's a game?"
"Well they might say something like 'Makes "Wet Set Jelly" sound like a computer game'."
"Yeah, but nothin' else?"
"Nope."

In control

On-screen printing without control characters (or tears) for the CBM 64 by **Peter Gravee**

One of the drawbacks of Commodore 64 Basic is the lack of simple cursor positioning commands corresponding to *Print At* found on other machines. The cursor can be positioned with strings of cursor control characters but this is clumsy and inconvenient.

Anything other than simple screen formats need careful counting of cursor characters from the last printing position or sending the cursor home followed by new strings of characters. However, hidden away in the Rom is a cursor positioning routine that can be accessed by machine code programs.

The routine considers that the screen is made up of 25 rows, numbered 0 to 24 from top to bottom, and 40 columns (numbered 0 to 39) starting from the left hand side of the screen. Thus, the first print position in the top left hand corner is row 0, column 0. The top right hand corner is row 0, column 39 and so on.

The Basic program below consists of three parts, the first *Poke*s a short machine code program into memory locations starting at *49154*. These locations are not used by the Basic program. The second part (Lines 150 to 270) demonstrates the use of the *Plot* program and the third part (starting at Line 1000) is the subroutine that transfers data to the machine code program, then uses it in conjunction with the internal cursor positioning subroutine to actually position the cursor.

Suppose we wanted to start printing a message at *row 6*, column 14. This is the *Plot At* heading in Line 180 of the main program. In front of the *Print* statement another line is inserted (Line 170) of the form: R=(row number): C=(column number): *Gosub* (line number where subroutine starts). In our program this is: *R = 6, C = 14, GOSUB 1000*. The subroutine starting at Line 1000 *Poke*s the row and column numbers into locations *49152* and *49153* respectively. It then calls up the machine code program (*Sys 49154*) which loads the row and column numbers into the *X* and *Y* registers respectively of the microprocessor, clears the carry flag (a prerequisite of the internal subroutine operation) then jumps to the internal routine at hex *$FFF0*. This positions the cursor from the data in the registers then jumps back to the machine code program, which in turn returns control to the Basic program via the *Return* statement at Line 1060.

The main program also uses this technique to position the messages associated with the *Input* statements that call for row and column numbers. An asterisk is printed at the cursor position to these numbers to prove that the cursor positioning has been carried out correctly. The machine code program (Lines 100 to 140) and the plot subroutine (Lines 1000 to 1080) can be incorporated in any program to allow cursor positioning anywhere on the screen. But take care when positioning the cursor in the last column of row 23 or any column in row 24: the scroll function operates and everything is winched up a line.

Program Notes

Line No	
100 140	Read machine code program into locations *49154* to *49164*
170 180	Position cursor at row 6, column 14 and print message
190 200	Reposition cursor for input statement and check if row number input is in range 0 to 24
210 220	Repeat for column number input (range 0 to 39)
230 250	Clear screen, print asterisk at inputted row and column numbers
260 270	Delay to check position is correct then return to Line 160 to start again
1000 - 1080	Subroutine to *Poke* row and column numbers into correct locations then call up machine code program

```
10 REM "PLOT" BY P.A. GRAVES
20 REM
100 REM READ IN MACHINE CODE PROGRAM***
110 FOR N=49154 TO 49164
120 READ A:POKE N,A
130 NEXT
140 DATA 174,0,192,172,1,192,24,32,240,255,96
150 REM MAIN PROGRAM********************
160 PRINT "J"
170 R=6:C=14:GOSUB 1000
180 PRINT "PLOT AT "
190 R=10:C=4:GOSUB 1000
200 INPUT "ROW (0-24) ";R1:IF R1<0 OR R1>24 THEN 160
210 R=14:C=20:GOSUB 1000
220 INPUT "COLUMN (0-39) ";C1:IF C1<0 OR C1>39 THEN 160
230 PRINT "J":REM POSITION CURSOR
240 R=R1:C=C1:GOSUB 1000
250 PRINT "*"
260 FOR DE=1 TO 3000:NEXT
270 GOTO 160
1000 REM PLOT SUBROUTINE****************
1010 POKE 49152,R
1020 POKE 49153,C
1030 SYS 49154
1060 RETURN
```

Data Remember

*Part One of a powerful filing program by **Peter Patton***

Microfile is a data filing program for the CPC464, which will allow you to create data files with up to 18 fields of 50 characters, which is more than sufficient for most home and small business applications. The program will prompt you every step of the way, but the following points should be considered carefully.

Cassette data files are slow and cumbersome things to use, and for this reason the program holds it entire data file in memory. Data is stored dynamically, that is without waste, so although you may set up a data file in which records can hold up to 750 characters, only the actual characters entered into such records are placed in the file and the unused portion at the end of a data field are ignored.

Each time a data file is loaded into memory, a routine within the program checks to see how much memory space remains and allocates the correct number of free records available for the current working session.

In order to reclaim the free space it is necessary to *Save* the data file, and then re-*Load* it. This means that if you start a session you may have, for example, room for 100 new records. If you were to enter 20 new records the free record counter would tell you that you have space for 80 more records. However, if you *Save* the file and re-*Load* it again, then the free record counter may tell you that you now have space for 95 records. This does not mean that 15 records have been lost, it merely indicates that that much free space has been reclaimed. In this way it is not inconceivable that your files may exceed 1000 data records, all of which are held in memory at the same time.

When deciding how your data file is to be structured, you should first sit down with pen and paper, and decide what sections or fields your data can be broken down to, and how many characters the largest single data item will take. In this way you will find that your files are laid out in the way which optimises the storage method outlined above. For example, if you wish to create a file which will hold names and addresses you may decide that you need these data fields.

1 Surname
2 First names
3 Address
4 Town
5 County
6 Post Code
7 Telephone

Having decided that these are the fields you wish to create, you must then allocate space to store that information. If we take field one Surname as an example, it would be all right to allocate 10 characters to this field, if you could be certain that all Surnames to be entered here would be 10 characters or less. However, if you have to enter the name *Higginbottom*, you will end up with the name *Higginbott*. This is because you failed to make allowances for such an eventuality when you created the file.

Similarly, if you think you'll play it safe and make the fields all of the maximum 50 characters, you will reduce your initial file capacity to some 47 records, thus you will spend much unnecessary time *Saving* and re-*Loading* the file in order to create more free records. So you can see that five minutes with pen and paper, can save many hours of frustration later. A typical example of the same file, structured with care may be

01 Surname (20 characters)
02 first names (25 characters)
03 Address (40 characters)
04 Town (20 characters)
05 County (15 characters)
06 Post Code (10 characters)
07 Telephone (12 characters)

Such a file will now hold over 200 records at the outset, and may well expand to over 400 records, all of which are held in memory and thus are immediately accessible.

Some programmers like to be able to press a single key in answer to a program prompt. Which is fine if the person using the program presses the correct key. My own personal view is that people often press wrong keys, and so you will find that all inputs in this program require you to press *Enter* before any action is taken. This causes little or no inconvenience and at the same time allows you to change your mind if you select the wrong key.

If at any time you enter a wrong key, it may be cancelled by pressing the *Del* key. However, this is destructive, and will erase any character it passes over, placing a star where the character was. The stars are not a part of the input, so don't worry if you leave them at the end of a data field. If you wish to carry on typing they are simply typed over. An input ends wherever the cursor is when you press *Enter*.

```
10 DEFSTR r,d,a,e,i,s,n : ' ###### Declare String
Variables #####
20 DEF FNC(t)=((80-LEN(n))/2)
30 MODE 2:r=CHR$(24):dl=CHR$(18)
40 s="M I C R O F I L E":GOSUB 2330
50 s="Copyright "+CHR$(164)+" 1984  P. Paton":
PRINT:GOSUB 2330
60 PRINT:PRINT TAB(10)STRING$(60,95)
70 S="M A I N   M E N U":PRINT:PRINT:GOSUB 2330
80 PRINT:PRINT:PRINT TAB(27)"( 1 )      Create A
New File":PRINT:PRINT
TAB(27)"( 2 )      Run Main Program":PRINT:PRINT
TAB(27)"( 3 )      Save
Data File":PRINT:PRINT TAB(27)"( 4 )
Exit From Program"
90 PRINT:PRINT TAB(10)STRING$(60,95)
100 LOCATE 30,22:PRINT"Choose Option ";:l=1:GOSUB
2150:op=VAL(e)
110 IF op<1 OR op>4 THEN PRINT CHR$(7):GOTO 100
120 ON op GOSUB 210,740,1380,150
130 GOTO 10
140 '################  Exit From Program ##########
#####
150 CLS:s="Press "+r+" S P A C E   B A R "+r+" to
return to menu ":GOSUB 2330
160 s="Any other key to leave this program":PRINT:
PRINT:GOSUB 2330
170 q$=INKEY$:IF q$="" THEN 170
180 IF q$<>" " THEN CLS:s="RUN TERMINATED":GOSUB
2330:FOR w=1 TO 2000:
NEXT:CLS:END
190 CLS:GOTO 40
200 '################  Create New File   ##########
#####
210 CLS:s="C R E A T E   F I L E":GOSUB 2330
220 LOCATE 25,23:PRINT"Enter Filename ";:l=10:GO
SUB 2150:name=e:fil$=e
230 IF LEN(name)=0 THEN PRINT CHR$(7):GOTO 220
240 LOCATE 1,3:s="Creating :- "+name:GOSUB 2330
250 GOSUB 2310
260 LOCATE 5,23:PRINT"How Many Fields Do Records
In This File Contain
( 1 - 15 ) ";:l=2:GOSUB 2150:x=VAL(e)
270 IF X<1 OR X>15 THEN PRINT CHR$(7):GOTO 260
280 WINDOW #1,5,75,6,20:GOSUB 2310:DIM f$(x)
290 LOCATE 5,5:PRINT STRING$(70,131):LOCATE 5,21:
PRINT STRING$(70,140)
300 FOR y=1 TO x:a=STR$(y)
310 IF LEN(a)=2 THEN a="0"+RIGHT$(a,1) ELSE a=
RIGHT$(a,2)
320 PRINT #1,a:NEXT
330 FOR y=1 TO x:LOCATE 20,23:PRINT"Enter Field
Name"
340 LOCATE 9,(y+5):l=10:GOSUB 2150
350 IF LEN(e)=0 THEN PRINT CHR$(7):GOTO 340
```

```
360 f$(y)=m
370 IF LEN(f$(y))<10 THEN f$(y)=f$(y)+" ":GOTO 370
380 GOSUB 2310:LOCATE 20,23:PRINT"Enter Field
Length
390 LOCATE 20,(y+5):l=2:GOSUB 2150
400 IF LEN(m)=1 THEN m="0"+m
410 f$(y)=f$(y)+m:fl=VAL(m)
420 IF fl<1 OR fl>50 THEN PRINT CHR$(7):GOTO 390
430 LOCATE 20,(y+5):PRINT"( ";STRING$(fl,45);" )"
440 GOSUB 2310:NEXT:y=y-1
450 '############ Quit, Save or Amend New File
####################
460 LOCATE 10,23:PRINT"(Q)uit or (S)ave or (A)mend
File Parameters ";:
l=1:GOSUB 2150:m=UPPER$(m)
470 IF m="Q" THEN RUN: ' ############# Quit #####
########
480 IF m="S" THEN 640: ' ############# Save ####
#########
490 IF m="A" THEN 510: ' ############# Amend ####
#########
500 PRINT CHR$(7):GOTO 460
510 GOSUB 2310:LOCATE 10,23:PRINT"Amend Field No.
";:l=2:GOSUB 2150:x=
VAL(m)
520 IF x<1 OR x>y THEN PRINT CHR$(7):GOTO 510
530 GOSUB 2310:LOCATE 10,23;PRINT"(N)ame or
(L)ength ",:l=1:GOSUB 2150
:m=UPPER$(m)
540 IF m="L" THEN 590 ELSE IF m="N" THEN 560
550 PRINT CHR$(7):GOTO 530
560 LOCATE 9,(x+5):l=10:GOSUB 2150
570 IF LEN(m)<10 THEN m=m+" ":GOTO 570
580 MID$(f$(x),1,10)=m:GOSUB 2310:GOTO 460
590 LOCATE 20,(x+5):PRINT dl:LOCATE 20,(x+5):
l=2:GOSUB 2150
600 IF VAL(m)<1 OR VAL(m)>50 THEN PRINT CHR$(7)
:GOTO 590
610 LOCATE 20,(x+5):PRINT"( ";STRING$(VAL(m)
,45);" )"
620 f$(x)=LEFT$(f$(x),10)+m:GOSUB 2310:GOTO 460
630 '############### Save File Parameters #######
##############
640 GOSUB 2310:LOCATE 5.23:PRINT"Insert Cassette
And Rewind Then Press ";r;" REC ";r;" & ";r;"
PLAY ";r;" Then ";r;" ENTER ";r;" ";:l=1:GOSU
B 2150
650 GOSUB 2310:LOCATE 5,23:PRINT" S A V I N G
P A R A M E T E R S"
660 name="!"+name
670 OPENOUT "!"
680 PRINT #9,name
690 PRINT #9,y
700 FOR x=1 TO y
710 PRINT #9,f$(x)
720 NEXT
730 CLOSEOUT:GOSUB 2310:RUN
740 REM ################### Main Program #######
############
750 CLS:s="M I C R O F I L E":GOSUB 2330
760 s="M E N U":PRINT:PRINT:GOSUB 2330
770 PRINT:PRINT TAB(10)STRING$(60,95)
780 s="( 1 )      Load A New File
":PRINT:PRINT:GOSUB 2330
790 s="( 2 )      Browse Through File   ":PRINT:
PRINT:GOSUB 2330
800 s="( 3 )      Search File           ":PRINT:
PRINT:GOSUB 2330
810 s="( 4 )      Return To Main Menu   ":PRINT:
PRINT:GOSUB 2330
820 PRINT:PRINT TAB(10)STRING$(60,95)
830 LOCATE 30,22:PRINT"Choose Option ";:l=1:GOSUB
2150:op=VAL(m)
840 IF op<1 OR op>4 THEN PRINT CHR$(7):GOTO 830
850 IF op=4 THEN 30
860 IF op<>1 AND flg=0 THEN 910
870 IF op=1 THEN GOSUB 1570:GOSUB 1700:GOSUB 1790
880 IF flg=1 AND op=2 OR op=3 THEN CLS:GOSUB 1700
890 IF op=2 THEN GOSUB 2310:GOTO 930
900 IF op=3 THEN GOSUB 2310:GOTO 1180
910 IF flg=0 THEN CLS:s="NO FILE PRESENT PLEASE
SELECT OPTION 1":GOSUB 2330:FOR w=1 TO 2000:
NEXT:GOTO 740
920 '################ Browse Through File #######
#############
930 x=1
940 FOR u=1 TO y:LOCATE 57,4:PRINT x;"  Of ";j;"
":LOCATE 22,(u+5)
950 PRINT dat(x,u);:t=VAL(RIGHT$(f$(u),2)):PRINT
SPACE$(t-LEN(dat(x,u)
)):NEXT
960 LOCATE 5,2:PRINT"Free =     free;" Records"
970 GOSUB 2310:LOCATE 5,23:PRINT"(Q)uit, (F)orward
, (B)ack, (J)ump, (D)elete, (A)mend, (+)=Add
Record ";:l=1:GOSUB 2150:m=UPPER$(m)
980 IF m="Q" THEN 740
990 IF m="F" AND x<j THEN 1060 ELSE IF m="F" THEN
1070
1000 IF m="B" AND x>1 THEN x=x-1:GOTO 940 ELSE
IF m="B" THEN 1070
1010 IF m="J" THEN GOSUB 1100:GOTO 940
1020 IF m="D" THEN FOR t=1 TO y:dat(x,t)=STRING$
(VAL(RIGHT$(f$(t),2)),45):NEXT:GOTO 940
1030 IF m="A" THEN GOSUB 2310:LOCATE 20,23:PRINT
"Amend Field ";:l=2:GO SUB 2150:GOSUB 1080:LOCATE
22,(b+5):l=VAL(RIGHT$(f$(b),2)):GOSUB 2150: dat(x,
b)=m:GOTO 970
1040 IF m="+" THEN GOSUB 1130:GOTO 960
1050 PRINT CHR$(7):GOTO 970
1060 x=x+1:GOTO 940
1070 GOSUB 2310:LOCATE 1,23:PRINT r;"  OUT OF
RANGE  ";r;CHR$(7):FOR t=1 TO 1000:NEXT:GOTO 970
1080 b=VAL(m)
1090 IF b<1 OR b>y THEN PRINT CHR$(7):GOTO 970
ELSE RETURN
1100 GOSUB 2310:LOCATE 20,23:PRINT"Jump To Record
";:l=3:GOSUB 2150:x =VAL(m)
1110 IF x>0 AND x<=j THEN RETURN
1120 GOTO 1070
1130 j=j+1:x=j:LOCATE 57,4:PRINT x;'  Of ";j:FOR
b=1 TO y:LOCATE 22,(B+ 5):PRINT STRING$(VAL
(RIGHT$(f$(b),2)),45):NEXT
1140 LOCATE 5,2:PRINT"Free Space = ";free;"
Records"
1150 FOR b=1 TO y:LOCATE 22,(b+5):l=VAL(RIGHT$(f$
(b),2)):GOSUB 2150:da t(x,b)=m:NEXT
1160 free=free-1:GOTO 970
```

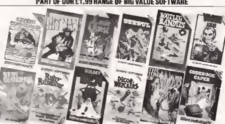
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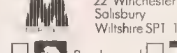
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Open Forum

We are always actively seeking programs for publication — either for Open Forum, the machine pages or Star Game. When sending in a program for consideration, a clear program listing should be sent, together with, wherever possible, a saved copy on cassette. Documentation — usually not more than 1000 words — should start with a general description of the program, what it does, and then some detail of how the program itself is constructed. We pay very competitive rates, according to the length and nature of the program and the quality of the accompanying documentation.

Memory probe

on Vic20

This program works on the unexpanded Vic20, or the expanded (16K) machine and is extremely useful, as it allows one to display on the screen a greatly enlarged version of the characters held in any group of eight consecutive memory locations. You can use it to probe into the Rom or Ram byte codings.

Roughly it works by *AND*ing the value peeked at a given memory location with each of the following bit values in turn - 2^7, 2^6, 2^5, 2^4, 2^3, 2^2, 2^1, 2^0. (See Lines 158 & 159) If the result is positive (ie. greater than 0) then a character is printed in one of the big squares, to represent a bit value (Lines 161 162).

On *RUN*ning the program, one is invited to give the first memory position to be studied. The character held in that and the following seven bytes is then printed on the screen together with the addresses of each byte. Pressing function button F7 allows one to study the subsequent eight bytes and so on.

```
146 REM "MEMORY PROBE
147 REM BY C.J.CATTANACH
148 PRINT"GIVE START OF MEMORY"
149 INPUTA
150 PRINTCHR$(147) S1=38400
151 FORL2=0TO154STEP22
152 FORL1=0TO7
153 POKES1+L2+L1,6
154 NEXT NEXT
155 A1=PEEK(648)*256 A3=A1 A4=A1+162
156 R=PEEK(A) PRINT "▮▮▮▮▮▮▮▮▮▮ADDR=",A
157 FORK=7TO0STEP-1
158 IFABS(RAND(2↑K))<>0THEN161
159 IFABS(RAND(2↑K))=0THEN162
161 POKEA1,81 A1=A1+1 GOTO164
162 POKEA1,32 A1=A1+1 GOTO164
164 NEXTK
165 IFA1=A4THEN173
166 A1=A1+14 A=A+1
167 GOTO156
173 GETA$ IFA$=""THEN173
174 IFA$="▮"THEN177
175 GOTO173
177 PRINTCHR$(147)
178 FORL2=0TO154STEP22
179 FORL1=0TO7
180 POKES1+L2+L1,6
181 NEXT NEXT
182 A1=A3 A=A+1 GOTO156
183 STOP
```

Memory probe
by C Cattanach

Arcade Avenue

Dedicated scores

Now that people are getting the message that we have had as many JSW infinite lives as we can handle. I am now getting swamped by a multitude of *Sabre Wulf* pokes — most of which we have already printed. Can I say again, try and hack some more original, or rather less popular, games. Thanks anyway to 'Elvin Ironmonger' of Manchester, Norman Tierney of London, and David McGavin of Erskine in Scotland who has an urge to save gamesplayers from "seven hour stints at games like *Sabre Wulf* that I myself could not stick for more than half an hour".

Anyway, this week I am going to concentrate on Ultimate games and some scores and tips from people with a greater amount of wholesome dedication.

First off Steven Hunter of Irvine, also in Scotland, has a high, or should I say a low, score of 83050 and 81%. Steven asks if I can reveal anything about the release of *Underwurlde*, but by the time you read this it should be available together with *Knight Lore*. They both promise to be something special.

Steven's low score has been beaten however by Mr D M Mountain of Brighouse who finished with 80 385 and 60%. His tip is to make a map and then only go to areas where there are dead ends to find the amulet. He then goes on to ask, "What does it mean when the natives turn yellow and make a noise?"

The answer comes from Andrew Dunbar of Buckley who says, "If a native flashes it means that it is in line with a nearby part of the amulet but it is not necessarily a short route to it!)" He also tips us that every time you collect a piece an extra monster appears, but he doesn't offer a high score of his own.

John Gibson of Sheffield first finished the game with a score of 137 805 but has since achieved a high of 353,295 and 96% which he attributes to having to return to the beginning to find the last piece of the amulet. He has also finished *Atic Atac* and JSW (by cheating) and gives his 'best buy' tips as *Deathchase*, *Codename Mat*, *Jet Pac*, *Ant Attack*, *Manic Miner* and *Penetrator*.

Finally Andrew Simmons of Drybrook who has a score of 104265 and 78%. Contrary to other letters, he is sure that pieces do not only appear in dead-end clearings and also offers some tips: "To escape the Sabre Wulf on the bottom row move quickly upwards into the entrance to a passage and it will walk underneath. There are three unkillable monsters — the Hippo, Rhino and Warthog. Only the rhino returns when it hits a wall, the others go to sleep and if they are in a downward bend it is possible to get past by moving left and holding fire and 'down'. The warriors appear in different colours, is there any difference?"

I think the answer to the last question is no, unless you are referring to the jaundiced flashing mentioned earlier. He also reveals what happens each time you collect an amulet piece but I think we will leave that for players to discover for themselves.

Tony Kendle

The Arcade Corner is a new section for anyone who enjoys playing arcade games. If you have any comments, from playing tips on difficult games or programs you'd particularly like to praise (or blame!) then write to Tony Kendle, Arcade Avenue, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

Scissors

on BBC

Here is a computer version of the old hand game Rock, Scissors and Paper. It runs on a BBC B, but could be easily adapted for any machine.

When typing the program in, you must match up the graphic symbols in the listing with the table below, and type *Shift* plus the appropriate function key to obtain colours and flashing letters.

```
10 MODE7
20 PRINTTAB(6);CHR$141;CHR$129;"ROCK SISSORS PAPER"
30 PRINTTAB(6);CHR$141;CHR$129;"ROCK SISSORS PAPER"
40 PRINT
50 C=0
60 H=0
70INPUT" How many games" ;Q
80IF Q<11 THEN 100
90PRINT"SORRY,BUT WE ARE'NT ALLOWED TO PLAY
 THAT MANY."'':FORA=1 TO 6000
:NEXT:RUN
100FOR G=1 TO Q
110CLS
120PRINTTAB(6);CHR$141;CHR$129;"ROCK SISSORS PAPER"
130PRINTTAB(6);CHR$141;CHR$129;"ROCK SISSORS PAPER"'
140PRINT'' "Game number" ;G'
150X=RND(3)
160PRINT' 3=ROCK... 2=SISSORS... 1=PAPER"'
170INPUT" 1  2  3 ,Whats your choice" ;K
180PRINT
190IF (K-1)*(K-2)*(K-3)<>0 THEN PRINT"
 INVALID"':GOTO 160
200PRINT" This is my choice...''
210ON X GOTO 220,230,240
220PRINT" ...PAPER'':GOTO 250
230PRINT" ...SISSORS'':GOTO 250
240PRINT" ...ROCK"':GOTO 250
250IF X=K THEN 320
260IF X>K THEN 310
270IF X=1 THEN 290
280PRINT' YOU WIN'''':H=H+1:GOTO 330
290PRINT' WOW I WIN'''':C=C+1:GOTO 330
300IF K<>1 OR X<>3 THEN 300
310GOTO 280
320PRINT" TIE GAME NO WINNER''
330FORA=1TO6000:NEXT
340NEXT
350PRINT'' Here is the final game score!"
360PRINT' I have won" ;C;" game(s)."
370PRINT" You have won" ;H;" game(s)."
380PRINT" and" ;Q-(C+H);" game(s) ended in a tie.
390PRINT' Thanks for playing''"
400INPUT" Do you wish to play again" ;X$
410 IF X$="Y" THEN RUN ELSE GOTO 420
420END
```

```
CODE.....SHIFT+f?
   .....RED    f1
   .....GREEN  f2
   .....YELLOW f3
   .....BLUE   f4
   .....MAG.   f5
   .....CYAN   f6
   .....WHITE  f7
   .....ON FL  f8
   .....OFF FL f9
```

Scissors
by C & D Pryke



GW6JJN

Do-it-yourself

In true amateur tradition, microradio goes home-brew and looks at a do-it-yourself way to get your Sinclair Spectrum on the air with Radio Teletype (RTTY).

The Sinclair Amateur Radio User Group (SARUG) at 3 Red House Lane, Leiston, Suffolk IP16 4JZ (SAE with all enquiries) has released details of an RTTY system for the Spectrum which can be purchased as a complete unit already made and set-up or as just the program and the printed circuit board with extensive instructions on how to make it yourself. The unit was initially announced a month or two ago by SARUG, and Microradio was given the chance to have a go. I have delayed the review until now to see if I could make the unit with the philosophy that if I can do it anyone can.

The unit was designed by a Danish amateur called Henning Andreesen OZ1BD. He also wrote the program for use with the unit, although another piece of software could be used as well, either bought or self written. The printed circuit board is compact and well-made which gives a feeling of confidence from the beginning. What is remarkable is that this board holds both the terminal unit and the interface making it a complete modem.

Referring to the enclosed component list, I then went about gathering the bits together. Luckily I had some of the components already, but a rough estimate of the component cost would be about £35.

Soldering the components to the board along with various links, etc, was not too difficult provided that great care is taken. I put the major ICs in sockets which is always worth doing both because soldering large ICs is not the simplest task and because it makes them easier to change if they fail some time. I found that soldering the edge-connector was a bit fiddly, but with patience it was achieved.

Setting the board up to the correct frequencies requires the use of either a frequency meter, an oscilloscope or a frequency checking program. Most people among the amateur fraternity can get access to one of these through a friend or a club and was simplicity itself.

With the program loaded, I tried it out on air and — it worked first time. If you are not quite as lucky the instructions give plenty of help with fault finding. Failing this SARUG can be called on to help.

On air the unit works very well. In fact, once it is plugged onto the back of the Spectrum it can be forgotten about since all control is handled by the program. A brief look at the circuit shows serial to parallel conversion is achieved by an 8251A USART chip, tones are modulated by an XR2206 function generator IC and demodulated by an XR2211 FSK demodulator. Where would we be without integrated circuits?

If you want a complete unit made and tested along with the program it will cost you £70. The price of the PCB with the instructions for making the unit is a mere £8, and the software is £10. SARUG point out that they do not supply kits, only either the complete unit already made or the PCB. I found that all the components were readily available from several mail order firms.

Ray Berry GW6JJN

This series of articles is designed for radio and microcomputer enthusiasts alike. If you have any queries that you want answered, hints and tips to share or topics that you would like to see covered, write to Ray Berry, Microradio, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

Open Forum

Barchart

on Dragon

This program draws a barchart for up to 40 values, scaling if necessary. Each bar is shown on the screen, with a name for that bar underneath. A title is shown, and a mean of the values.

Also included is a short filing routine for storing and retrieving the number sets. The text on the high resolution screen is achieved using the Dragon *Draw* command in PMode 4.

Program	Notes
20-300	Intro, input numbers and names.
310-680	Draw the bars, title and means
700-1130	Characters
1140-1230	Draw characters
1240 1340	Input the file
1350 1430	Send out file

```
20 CLEAR3000:DIM A$(255)
30 DIM UP(50):DIM LP(105):DIM V(30)
40 DIM N$(30)
50 P=120:CO=5:PP=134:T=0
60 GOSUB 700
70 PRINT"  this program is designed to
   draw a bar graph for up to       values
   and scale them if needed"
80 PRINT"   PRESS ANY KEY TO CONTINEUE"
90 SCREEN0,1:EXEC41194
100 CLS1
110 PRINT"  DO YOU HAVE A FILE READY(Y/N)";:INPUT CH$
120 IF CH$<>"Y" THEN 160
130 INPUT"WHAT IS THE TITLE";T$
140 GOSUB1240
150 GOTO310
160 INPUT"WHAT IS THE TITLE OF THE GRAPH";T$
170 IF LEN(T$)<1 THEN 160
180 INPUT "HOW MANY NUMBERS(1-20)";NU
190 IF NU<0 THEN 180
200 IF NU>30 THEN 180
210 FORT=1TO NU
220 PRINT" NUMBER ";T;" = ";:INPUT V(T)
230 IF V(T)>P THEN P=V(T)
240 PRINT" NAME ";T;" =";:INPUT N$(T)
250 ME=ME+V(T)
260 IF LEN(N$(T))<1 THEN N$(T)=" "
270 NEXTT
280 S=S+0 25
290 FOR S1=1 TO NU IF V(S1)/S)120 THEN 280 ELSE NEXT S1
300 FOR S2=1 TO NU      =  S2  S :NEXT S2
310 PMODE4 1:PCLS:SCREEN1,1
320 LINE(2 18)- 253 24) PSET,BF
330 LINE(2,2)- 253 12) PSET,BF
340 LINE(0,24)-(255 24) PSET
350 AX=150:SP=25:AD=3
360 S$=STR$(P) X=-4:Y=20:GOSUB 1140
370 LINE(25 30)-(25,150),PSET
380 FORYU=25 TO 225STEP5
390 LINE (YU AX)-(YU,AX+2),PSET
400 NEXT
410 LINE (25,150 - 225,150),PSET
420 FORT=30 TO 150 STEP 10
430 LINE(SP T)-(SP-2 T) PSET
440 NEXT
450 FORT=35 TO 145 STEP10
460 LINE(SP T)-(SP-1 T),PSET:NEXTT
470 FOR HJ=1TO NU
480 PP=134
490 LINE(SP AX-V(HJ))-(SP+AD AX),PSET,BF
500 FOR LO=1 TO LEN(N$(HJ))
510 DRAW"BM "+STR$(SP)+","+STR$(PP)+";"
520 B$=MID$(N$ HJ),LO,1
530 B=ASC(B$)
540 DRAW A$(B)
550 PP=PP+6
560 NEXT LO
570 SP=SP+5
580 NEXT HJ
590 S$=T$:X=25:Y=3:CO=0:GOSUB1140
600 S$="MEAN = ";X=24:Y=16:CO=0:GOSUB1140
```

The Music Box

Midi marathon

The tide of music peripherals and software is beginning to become a flood — in time, no doubt, for the annual ritual of gross indulgence called Christmas.

At Compec this week comes the release of Acorn's long-awaited music system for the BBC — Acorn Music 500, by Hybrid Technology of Cambridge. I shall be reporting on this in a forthcoming column.

Meanwhile, let me note that there are plenty of alternatives around, for the BBC as well as other micros, so don't be cajoled into buying just because of the Acorn name without shopping around first.

The Italian synthesiser company, Siel, makers of the excellent DK600 polysynth, have completed the conversion of their MIDI step-time sequencer for the BBC. This enables you to use a synthesiser to play compositions made also have a cheap (£449) MIDI synth — the MK900
— the MK900

The race for such an instrument at a price that can make a synth a convincing peripheral for your computer is on. Front runners are Siel, Casio with the CT101 and Yamaha with the CX5 computer which, of course, includes a fully fledged synth in the form of a plug in keyboard and FM synthesis module. Further details of these from: Siel (UK), ANED Depot, Reigate Road, Hookwood, Horley, Surrey RH6 0AY, Casio, Unit 6, 1000 North Circular Road London NW2 7JD, and Yamaha Kemble Music (UK) Mount Avenue, Bletchley, Milton Keynes MK1 1JE.

There are yet more peripherals for the Commodore 64 arriving daily — many of which utilise the machine's on board programmable sound generator (PSG) to produce all the sound output. The 64 is really becoming the *de facto* standard for musical applications and I shall be dealing with it (as well as other machines like the Spectrum and the BBC) at greater length in future columns. Meanwhile let me just comment on the brouhaha following Mastertronic's release of their 'Chiller' game, whose musical soundtrack has had to be changed. I've heard the original track, and I must say I found it astonishingly good. *Chiller* is a sign of things to come. Record companies and music publishers had better sit up and listen.

Mark Gornall has written from Edinburgh asking whether he should buy a keyboard which uses his 64's sound chip or whether he should buy a synth that interfaces to his computer. Well Mark, your example of the Casio MT-200 is not something I'd choose — you will get far more flexibility and (dare I say it) better sound from a simple keyboard which allows you to use the 64's SID chip. However if you've got the money (and it will cost considerably more than the MT-200) buy a MIDI keyboard with interface and a real time sequencer. Keep reading the column for more info!

Marc Ryan of Sheffield has written with a tougher nut to crack — the problem of interfacing a guitar. This is a altogether bigger question — and and I'll leave the answer till next week!

Gary Herman

The Music Box is a new weekly column with news, reviews and readers comments on all aspects of micros and music.

Any readers with experience of computer music making or companies with new product news are invited to write to drop a line explaining what they're doing to: Gary Herman, The Music Box, 12 13 Little Newport Street London WC2R 3LD

```
610 MI=ME/NU
620 S$=STR$(MI):X=65:Y=161:CO=0:GOSUB1140
630 LINE(2,180)-(253,189),PSET,8R
640 S$="PRESS ANY KEY TO CONTINUE":X=50:Y=182:CO=8:GOSUB1140
650 EXEC41194
660 CLS:INPUT"ANOTHER GRAPH OR SAVE FILE(Y/N/F)";CH$
670 IF CH$="F" THEN GOSUB 1350
680 IF CH$="N" THEN END ELSE RUN
690 GOTO660
700 A$(40)="R3D4L3U4"
710 A$(42)="BR1BD4E2F2D2H2R2U2D4"
720 A$(40)="BR4B9F9"
730 A$(42)="BR1F3G3"
740 A$(46)="BR1BD4U1R1D1L1"
750 A$(61)="BR1BD2R3BD2L3"
760 A$(49)="R2D0L2R3"
770 A$(50)="R3D2L3D2F3"
780 A$(51)="R3D2L3R3D2L3"
790 A$(52)="D2R3U2L4"
800 A$(53)="R3L3D2R3D2L3"
810 A$(54)="D4R3U2L3"
820 A$(55)="R3E4"
830 A$(56)="D4R3U4L3D2R3"
840 A$(57)="R3E4U2L3U2"
850  REM
860 A$(65)="BR1R3D6U9L3U9D6"
870  REM
880 A$(66)="BR1R3D6L3U5R3L3U3"
890 A$(67)="BR1R3L3D6R3"
900 A$(68)="BR1D6R2U1R1U4L1U1L2"
910 A$(69)="BR1D6R3L3U3R3L3U3R3"
920 A$(70)="BR1R3L3D3R3L3E3"
930 A$(71)="BR1D4R3U3R3L3"
940 A$(72)="BR1E4U3R3D3U6"
950 A$(73)="BR1BR3L2D6"
960 A$(74)="BR1R3L1D6L2"
970 A$(75)="BR1D6U3R2U1R1U2D2L1D2R1E2"
980 A$(76)="BR1D6R3"
990 A$(77)="BR1E4U5R3U1D6"
1000 A$(78)="BR1D6U5D1R1D1R1D1R1D2U6"
1010 A$(79)="BR1R3D6L3U6"
1020 A$(80)="BR1D6U3R3U3L3"
1030 A$(81)="BR1R3D4D2U2L1D1L1D1L1U6"
1040 A$(82)="BR1D6R3H3R3U3L"
1050 A$(83)="BR1R3L3D3R3D3L3"
1060 A$(84)="BR1R3L2D6"
1070 A$(85)="BR1D6R3U6"
1080 A$(86)="BR1D6R1D1R1U1R1U5"
1090 A$(87)="BR1D6U1R3D1U6"
1100 A$(88)="BR1F3D2BL3U2E3U1"
1110 A$(89)="BR1D3R1D3R1U3R1U3"
1120 A$(90)="BR1R3D6D2R3"
1130 RETURN
1140 IF CO=0 THEN CL=8 ELSE CL=5
1150 FORYP=1TO LEN(S$)
1160 B$=MID$(S$,YP,1):Z=ASC(B$)
1170 DRAW"BM"+STR$(X)+","+STR$(Y)+";C"+STR$(CL)
1180 DRAW A$(Z)
1190 X=X+5
1200 NEXT YP
1210 CO=5
1220 DRAW"C5"
1230 RETURN
1240 PRINT"PRESS ANY KEY TO CONTINUE"
1250 AR$=INKEY$:IF AR$="" THEN 1250
1260 OPEN"I",#-1,"FILE"
1270 INPUT#-1,NU
1280 FORTT=1TONU
1290 INPUT#-1,V(TT)
1300 INPUT#-1,N$(TT)
1310 IF EOF(-1) THEN 1340
1320 NEXT TT
1330 CLOSE#-1
1340 RETURN
1350 PRINT"PUT TAPE IN PLAYER"
1360 OPEN"O",#-1,"FILE"
1370 PRINT#-1,NU
1380 FORTT=1TONU
1390 PRINT#-1,V(TT)
1400 PRINT#-1,N$(TT)
1410 NEXT
1420 CLOSE#-1
1430 RETURN
```

Barchart
by R Smith

Book Ends

Book *Commodore 64 Game Construction Kit* **Micro** Commodore 64 **Price** £14.30 **Supplier** Prentice Hall International, 66 Wood Lane End, Hemel Hempstead, Herts

The fact that the Commodore 64 is a superb machine hampered by the difficulty of handling sound and graphics from Basic has often been commented upon.

This book presumes a little knowledge of that language and provides a step-by-step analysis of games programming. It emphasises good habits, such as pre-planning and structuring while it is not afraid to venture into sprite control and sound effects.

The book won't make you a computer whizz-kid overnight but it does provide a clear and friendly introduction to various types of game.

At 400-plus pages it's a good read, but being an American import it's also expensive.

John Minson

Book *Mr Chips Comes Home* **Micro** Various **Price** £9.95 **Supplier** Duckworth, The Old Piano Factory, 43 Gloucester Crescent, London NW1

Magazine reviews tend to concentrate on the largest software market, games. Now for the price of one cassette comes a book which could save the parent who is buying educational programs a lot of money which would otherwise be wasted on grade E rubbish.

Sensibly written with the non-expert in mind, the authors do more than provide frank reviews of over a hundred programs for most micros (though check how well yours is catered for in the index). Hardware is also discussed and the need to integrate home learning with the child's school syllabus is emphasised.

This book has a warm and witty approach and fills a gap by uncovering a hitherto well hidden area. It deserves to do well.

John Minson

Book *QL Assembly Language Programming* **Micro** QL **Price** £12.95 **Supplier** McGraw Hill Book Company (UK), Shoppenhangers Road, Maidenhead, Berkshire

When I read the title of this book, I was expecting a beginners guide to 68008 programming, but it's nothing of the sort.

In fact, it's very similar to the *QL Advanced User Guide*, its main rival, which is itself similar to the Sinclair QDOS Manual.

It starts by covering the processor, though continually refers to it as the 68000, which is rather strange. Then it starts on QDOS, covering the memory layout and usage, though gives only the slightest mention of a few system variables. Following this comes many of the QDOS traps, though it has more missing than the Advanced User Guide, while retaining the same inaccuracies.

There are several substantial example programs included though some are uncannily similar to those in the book's rival. They were all written using the publishers own assembler/editor, and two chapters are set aside for the instructions to it, which are purely to fill space, as the program itself must come with the instructions too. It should be made a punishable offence to produce a book of 270 pages with such an unhelpful index.

None of the text has been typeset, but is straight daisywheel output, which in conjunction with the paper used gives it a rather cheap appearance inside. Although it seems to look larger than the *QL Advanced User Guide*, it contains less information, and is more expensive.

Bill Hoskins



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Tony Bridge's Adventure Corner



Pick of the crop

Now the run-up to Christmas is getting into top gear, we adventurers look like being assured the best crop of software for a couple of years.

The Grand Elf caught a brief glimpse of *Tir Na Nog* the other day, and was overwhelmed (and not this time, by *PCW* coffee!) This graphic adventure from Gargoyle Games, until now known for their arcade hit *Ad Astra*, is set in the land of youth of Celtish mythology. While it owes much to both *Valhalla* and *Lords of Midnight*, the final result is unlike any other adventure and quite startling.

Your brilliantly animated character lopes along through the landscape, all of which is mapped out in a colourful picture in the accompanying booklet. Various objects lie around, waiting to be picked up — there is the obligatory sword and dagger, but there are also things like a needle. What use this might be I don't know (is it a red herring?) there are also lots of locked doors, the secrets of which will surely need to be investigated at some stage. You can wander about past enigmatic buildings and through bewildering mazes using your on-screen compass and keeping your bearings with the aid of distant landmarks which move slowly past on the horizon. These can be picked out on the map in order to pin-point your position — and all this in fabulous graphics.

To keep you on your toes, several little creatures, the mischievous Sidhe occasionally appear, and you can fight these or run away as you wish. More serious dangers present themselves in the form of weird monsters who can jump out from a bush just when you are getting complacent.

Tir Na Nog should now be on sale and a more in depth report will be forthcoming as soon as The Grand Elf receives a copy. In the meantime, I think you will enjoy it. Details from Gargoyle Games, 74 King Street, Dudley, West Midlands.

A branch of adventuring which I have always had a fondness for, is Sword and Sorcery. In fact, this is the forerunner of Dungeons and Dragons, which in its turn was the foundation of computer adventuring. So, PSS's latest program, aptly entitled *Swords and Sorcery*, is of great interest. For the Commodore 64 and Spectrum, this program is promised as the first of a series — the character developed in this game can be transferred to subsequent expansion modules. Despite the impression you may gain from the hyperbole of the advert, this is not a new idea and nor is the idea of "wandering through the unending corridor on a quest for material, physical and/or spiritual power." However, there has been considerable interest shown in this game — again, a Grand Elf Report as soon as possible. Details from PSS, 452 Stoney Stanton Road, Coventry.



This week's *Quill'd* game has a special significance for me. *The Quest for the Holy Joystick* is the latest from Delta 4 Software, and is a hilarious breathtaking romp through adventureland, swiping as it does at many of the sacred cows of popular computer software. From London, and a dig at *Denis* and Roland Prat, you will go to Level 9 Land, where you can get your own back on the nightingales and Scotland where you will find a lot of Pokes and cheat programs for something called *Wet Jet Silly* — then it's down to Portsmouth (22 over 7!), then to Europe and America (all this in just four locations, would you believe!)

My favourite however (and I hope you'll forgive me for this!), is the trip to Ally Pally. There, at 'the Umpteenth ZX Microfair', you'll be able to visit a couple of stands. On one of these is a take-off of *Valhalla*, complete with Little Graphics, while on the other you can actually hold a conversation with someone called Tony Bridge! Add to this the title page, which features a couple of adventure in-jokes and a picture of a very strange-looking person, only one or two spelling mistakes and the Beeb-lookalike character set, and you have a wonderfully witty (no silly nudge-nudge humour) adventure, which pokes gentle fun and is a pleasure to play.

The only drawback, apart from actually getting stuck in the Goblin's Dungeon again (I thought I'd seen the last of that one), is the number of locations — a mere 54. I could certainly have done with many more — come on Delta 4, you've got 14K left to delight us with! Contact Delta 4, The Shieling, New Road, Swanmore, Hants.

Nemesis Software is a company that seems to concentrate on games for the newest micro success story — the Amstrad CPC464. They now have two adventures in the Arnold Blackwood series they are *Trial of Arnold Blackwood* and *Arnold goes to Somewhere Else*. What a wonderful title! As I've said before a good title is often half the battle, and these two ensure a second look. I'm afraid that I don't yet have access to an Amstrad, so I must rely on Nemesis when I tell you that both programs use the maximum Ram with Save routines, and 180 locations (in the second program at least). Also say Nemesis, "We haven't yet found a spelling mistake!" Although there are already quite a few adventures already available for the Amstrad, these seem worth a look. Nemesis, 10 Carlow Road, Ringstead, Kettering, Northants.

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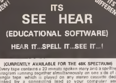
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This series of articles is designed for novice and experienced Adventurers alike. Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter. So, if you have an Adventure you want reviewed or if you are stuck in an Adventure and cannot progress any further write to Tony Bridge, Adventure Corner, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.


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Peek & Poke

Video recorder

Edward Plummer of Milton Keynes writes

Q I read with interest your answer to S Keating regarding recording programs on a video cassette recorder.

I have a VCR and a BBC B computer, and since I have very little knowledge of recording programs via this method, I would be grateful if you could kindly let me know the following:

1) How to go about recording programs on a VCR.

2) Are there any books on this subject?

A As you may know, home micros store their programs, and data on cassette tape as 'noise'. Therefore what you need to do is to connect your BBC's cassette input/output leads to the VCR's sound input/output socket.

You may well have to get leads made for that, but this will present no problem, as the plugs at either end are freely available.

I do not know of any books covering VCR as a computer recording medium but in any case the computer will only treat the VCR as a cassette recorder.

Creating UDG's

R J Burden of Wyke Regis, Dorset writes

Q Please could you tell me how to disable the *Record* on the cassette tape recorder and how to do UDGs on the 16K Vic 20?

A I am afraid that there is no foolproof method of disabling the record function, without disconnecting the cassette. As long as the correct signals are sent to the cassette port the cassette will be able to be started and stopped by program control.

To create your own UDGs on the Vic, is quite a complex process to explain, so I will confine myself to merely showing you how to do it.

```
Step 1 — relocate the screen:
POKE 648 30:POKE 642,32
POKE 36869,240:POKE 36866,150
POKE 0 108 POKE 1,0 POKE
2 192:SYS(0)
Step 2 — reserve memory
POKE 52,98 POKE 56,28:CLR
Step 3 — move character set
FOR I = 7168 TO 7679:POKE
I,PEEK(I+25600):NEXT I : POKE
36869,255
Step 4 — create UDG
10 FOR I = 7432 TO 7439:READ
b.POKE I,b.NEXT
20 DATA 90,102 90 102 90,36 102,0
```

Teacher trouble

M Reynolds of Birmingham, writes

Q I am a school teacher desperately coming to grips with the micro revolution!

The Birmingham schools have the RML 480Z machines, but these are not within my price range. I have for some time thought of writing to you but feel my question is perhaps a little silly. I have now taken my pen in hand to ask it anyway. Is there any machine in the more modest price range compatible in Basic with the RML machine?

I would like to start a school computer club and would like to recommend a machine for the children so that listings, etc, can be shared. I have a Vic 20 but that has obvious limitations. Am I better advised to wait for the *MSX machines*, or would say an *Amstrad* be better? I hope you can catch my drift?

A A cheap micro that is compatible with an RML 480Z, that a child could use ... tricky!

I definitely congratulate you on attempting to take the bull by the horns. You are starting off on a very interesting period in your teaching career, if my own experience is anything to go by.

Personally, I would not wait for the MSX machines, as they are likely to be too expensive for the kids to buy. The Amstrad is not a bad idea, but (and I hate to say that), why have you not considered the BBC B, Electron option. The amount of software available for this machine through the education authorities is very large, and the Electron is well within the price range of most people.

Sprite collisions

K B Lo of Southampton, writes

Q I would like to know how a collision between a sprite and data can be detected, and with what sprite and what data on the CBM 64?

A The CBM 64 sprite system automatically detects collisions between any sprite and any background data. The sprite to data collision register (Hex DO1F) contains details of any collisions that have occurred. This register is organised, and used, in exactly the same way as the sprite collision register (hex DO1E). Remember that once you *Peek* these registers, they are automatically cleared.

Spectrum complier

Craig Shorland of Leicester, writes.

Q I recently acquired a compiler for my ZX Spectrum, but was disappointed to find that the compiled code would not run independently of the compiler. This meant that the compiler would have to be loaded each time that I wanted to use any of my compiled programs, and the compiler itself uses 5½K.

Could you please recommend some compilers which compile most of the Spectrum commands and do not need to be present when running compiled code.

A I have had a number of letters on that subject, and while I sympathise with the points made in Craig's letter, I also understand the software companies point of view.

The main reason that no compiler exists for the Spectrum of the type you require is that the micro compilers are modelled on the mainframe computer versions. What I mean is that when a mainframe program is compiled, in order to run it needs to be able to access routines in the compiler disc libraries. These libraries are not available on machines such as the Spectrum, and so the programmers use the same code (contained within the compiler) to achieve these ends.

You must also bear in mind that Spectrum Basic is non-standard.

Extra commands

S Bennett of Prestatyn, Clwyd, writes:

Q Could you please let me know the name of a Compiler for the Commodore 64 — one that will compile any program into machine code.

I have heard of one called *Scope*, but you have to learn a further 46 commands to use it.

A I do not know of any compiler for the CBM 64 which claims to be able to handle any Basic statement. It is almost always the case with micro compilers that there are facilities of Basic that are not supported. Normally that does not present a problem.

If you find a compiler which offers additional facilities to normal Basic, and compiles the majority of standard Basic commands, then I think you would be advised to get that one, and learn the extra commands. You may find that their use will shorten your Basic programs in any case.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Phil Rogers and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke, PCW*, 12-13 Little Newport Street, London WC2R 3LD

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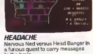
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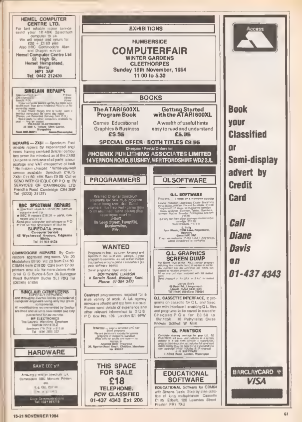
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COMMODORE SOFTWARE, Future Finance disk based as new £25 Easy Stock disk based as new £25 both £40 35 Windsor Rd Bridgewater Somerset Tel 84287

COMMODORE 64 and cassette unit both boxed 10 original games one games book Price negotiable Tel 01 902 7245 after 4pm

VIC 20 16K. Ram disk drive printer cassette joystick motherboard speech synthesizer word processor program lots of s/w program books etc £475 ono Tel Swindon 75040 04 79779

VIC 20 + 32k S/Ram + super expander and motherboard Over £110 of original s/w C2N cassette £150 ono Tel 0744 882413

COMMODORE 64 with disk D1541 drive and MPS801 printer Also word processing and addressing package Boxed £450 Tel 01 735 8495 evenings

VIC 20 COLOUR COMPUTER, cassette deck joystick, books manuals cassette case 16 games dust cover two blank cassettes VGC All for £150 Phone 01 856 5147 (Welling Kent) after 4pm Mon-Fri anytime Sat. Sun

CBM 64 SOFTWARE for sale Revenge O T M Camels-£5 Attack O T M Camels-£4 Guardian-£6 BMX Racers-£1 Annihilator-£3 or the lot-£17 All originals Phone 442502 (0245)

VIC 20 C2N 16K switchable Intro to Basic 1 software including Jetpack & Pacacuda still under guarantee Sell at £130 Tel 857548 (0633) Newport. Ask for Pete

CBM 64 s/w originals to swap or sell £4 each Potty Pigeon Daley's Decathlon Beach Head Arabian Nights Sheep in Space Revenge TKV Tel Andy on 0224 582164 after 6pm.

CBM 64 software for sale Titles include Sammy Lightfoot Pole-Pos, Dig Dug Pitfall II H.E.R.O Skramble Survivor Metamorphics Aztec Challenge and lots more Phone (0604) 409618 ono ask for Paul.

VIC 20 manual recorder Some games £145 Tel 01 263 4012

VIC 20 8K RAM s/w Boxed Good condition £90 Tel Esher 63055

CBM 64 20" colour t v computer cassette recorder Introduction to Basic Part I £150 Original s/w joystick mags £300 Tel Reading 883238

SOFTWARE for sale VIC 20 Golf (expanded) Spabe Fortress, Wizard and The Princess, £3.00 each Cosmic Cruncher £7.00 BBC Jet Power Jack £6.00 All originals Phone Radyr (0222) 842649

COMMODORE 64 software 22 top titles including International Soccer The Hobbit Manic Miner Hunchback etc All originals in excellent condition Must sell urgently hence £50 the lot Phone Bradford (0274) 677143

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COMMODORE 64 original games for sale cheap Kokotoni Wilf Micro Olympics Gortek and the Microchips Cassoed 50 Encounter Loco Caesar Lazarian Space Shuttle Phone Rotherham 70148

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BBC B os1.2 Immaculate lots of s/w Worth over £800 Sell for £380 ono Tel Steve Rainford (074488) 3757

BBC Software for sale all originals and cheap Including Castle of Gems Captain Capers Manic Miner Blagger Demolator Pedro etc Phone John Romford 63638 between 5 and 7 p m

BBC Model B — unwanted prize still in carton Acorn guarantee etc. £340 Hambble 3086 (Middx)

ACORN ELECTRON + joystick, interface & tape recorder + s/w Chuckie Egg, Pedro Micro Olympics Will swap for Commodore 64 with C2N or £220 Tel 0386 830089

BBC B Software brand new, unused Still in shrink packs. Monsters Rocket Raid Planetoid All Acornsoft games £7.00 each Phone Southampton (0703) 552724

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BBC B OS 1.2, two joysticks and over £170 worth of software All leads + manual sell for £340 ono Tel Trowbridge (02214) 69812 after 4 p m

FOR SALE BBC B with Graphics Rom Sureshot joystick £200 worth of software All leads Programming books and magazines v g c in original boxes £450 ono Tel Newport (0633) 850358

BOOKS for sale Assembly language programming on the BBC Micro creating Adventure programs on the BBC Micro and Computer Programming in Basic £7.50 the lot Phone Chelmsford (0245) 50432.

BBC MODEL B 1.2 OS Acorn DFS 400K double sided 40/80 track Switchable disk drive Book & games inc. The Advanced User Guide and Elite £600 ono Tel 01-390 2455 after 6 p m

Ataris for sale

ATARI 800 – Basic + Recorder + Quickshot Stick + £108 worth of s/ware Inc Sub Commander Will sell £185 ono or swap CBM64 Tel Castledown 880 (Capeness)

ATARI 600XL, 1050 disk drive 1010 recorder games mags etc £600 ono Tel 01 571 2870

ATARI 800 808 Basic Program kit + 1010 recorder excellent condition £150 ono Tel (09277) 84880

ATARI 600XL for sale Nearly new £150 Also available a wide selection of software to be sale separately Ring Burntwood 72055 for details after 4.30pm

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ZX81s for sale

ZX81 original Software for sale from £1 for M Hasker 17 Camerville Weston Favell Northampton NN3 3ES or Tel (0604) 410093 Also ZX Printer for sale £22.

ZX81 16K RAM (recently reconditioned) + manual + 2 power packs + software £30 ono Tel 01 647 6095 (South London)

ZX81 16K Add ons Power supply Manuals and 3 games £30 Tel Stan 01 877 0860

ZX81 boxed and virtually new £30 Tel Esher 63055

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For Sale

INTERTON VC4000 owners are you starved of cartridges? If so then read below Due to changing system I have a number for sale £5 each. Tel Hartlepool 68374 after 5pm

MONITOR — SANYO green display suitable for use with CRM Apples etc. Complete with fully adjustable stand. Excellent condition £80 Tel Camberley 68151

COMMODORE DOT MATRIX printer 1526 (MPS 822) Excellent condition £225 Commodore dual disk drive 3040 slight fault sensible offers Tel Dave Hornchurch 55733

AMSTRAD CPN 464 + green monitor joysticks + £60 of programs £290 Tel 01 337 8695

FOR SALE All originals Scrabble £6 games designer £9 Hobbit £9 or the set for £25 Ring Nigel on (0457) 82388 6pm to 10pm

APRICOT twin disk drive 256K Rom Box of 10 disks s/w CPM86 + £1300 ono Tel 01-884 0546 eves Tel 01-263 7010 ext 281 days Mr David

DOWNSWAY programmable joystick interface for Spectrum £15.00 Tel 01-654 0053 eves

ARCADE PROFESSIONAL joystick + several games (original) Tel Mark after 5pm 0268-685212

32K CHEETAH RAMPACK (Spectrum memory upgrade) £20 or swap for Quickshot joystick + Interface or s/w W.H.Y Tel 021 770 6877

BOOK entitled "Introducing Spectrum Machine Code" Bargain only £3 also ZX81 Rom chip with program manual ideal for ZX80! £3 Phone B-ham 021-8437 Buyer collects

TWO ZX PRINTERS for sale £30 each or £35 both New and unused Phone Basildon (0268) 285406 evenings/weekends.

SHARP PC1251 computer with CE 125 interface containing printer and recorder in case with instruction manuals Spreadsheet and Database programs Total cost £210 Perfect order £125 ono Denbigh (074571) 2147

EPROM BOARD complete with 3 × 2K Eproms. Gold plated edge connector separate chip selects £6 Fleming 15 St Leonards Rd Stockport SK4 2RD Tel 061-432 4539

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COMPLETE COMMUNICATION System VIC20 RS232 Interface Decom buzzbox modem terminal s/w Call Computers all over the world Only £150 or swap 48K Spectrum Tel 01 794 1234 (work) Simon

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ADAPTOR UNIT enables computer and TV aerial to be connected to TV at the same time Immediate switching between the two £5 N Mawhinney Sutheran House East Rainton Tyne Wear DH5 9QJ

TRS-80 MODEL 1 extended Basic 16K computer with 14" video monitor and user manual £130 Tel 0324-812470 (Nr Glasgow) East

ZX MICRODRIVE & Interface One comes with four ZX microdrive cartridges must sell hence £95 Take Sherlock Holmes Adventure as p/x Can be seen working Ring Paul 06864 809 (Worcester)

SORD CGL M5 16 colours 32 sprites Inc 2 joysticks owner upgraded £50 only Tel 0258 58868 Mrs Taylor

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QL ADVENTURE Escape from Orion 80K Graphic/Text 70 screens £120 66 Chesterfield 71987

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ORIC-1 48K + tape recorder + books + Hobbit other games. Sell for £80 01 381 4868

SINCLAIR QL AH Rom Boxed as new £365 01-570 4351 after 6pm

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FIDELITY sensory chess challenger As new £45 CBM 64 printer plotter as new £65 Tel 01-656 0511

CASIO-TUNE MT70 electronic keyboard as new Complete with bar code reader plus all original packing Offers around £120 Tel 01-418 3995 after 6pm

FOR SALE Per Shugart half height double sided 40 track disc drives as new Bargain £210 Would split Also Brother EP20 personal electronic typewriter £60 Telephone Huntingdon (0480) 811020

MEMOTECH 512 software snowball recorder manual references notes Excellent condition 6 months guarantee £240 ono or exchange for good printer (Centronics) Tel 061-633 6000 weekday afternoons 12.00 to 5.00

COMPUTER SWAP

Computer Swap entries are limited to 30 words. Either fill in the accompanying form and send to Computer Swap *Popular Computing Weekly* 12-13 Little Newport Street London WC2R 3LD or telephone 01-437 4343

All software offered through computer swap must be in original condition and for private sale only

It cannot be swapped

Warning: It is illegal to advertise pirated software.

COMPUTER SWAP

Please write your copy in capital letters on the lines below

Name ....

Address ....

Telephone..........

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ORIC 1 48K, brand new unwanted gift, 14E Jupiter Ace 16K £25 BBC 4 colour MCP40 plotter £50 ono Tel D James on Luton 574531 after 6pm

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FOR SALE — Epyx twin cassette summer games £10 Tel 01-470 0661 (East London)

SHARP MZ 80K integral cassette + monitor £150 programs + manual £100 Tel 0532 689215 — John

TI 994A + extended Basic speech synthesiser + ten cartridge games, manuals etc Yours for £100 Glasgow Area Phone (0698) 747409

SHARP MZ8 40K (48K + Hi-res) integral VDU and cassette software manuals books user notes Will accept first offer over £800 which includes hardware Phone 01-889 1090 (evenings)

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MICRODRIVE interface one and eight cartridges with books leads boxes and some software Also Microdrive book £85 one Phone 00943 2324 evenings only

MEMOTECH MZx 512 £260 joystick, books games Mint condition Tel Horndean (0705) 594821

NEC 8801 business computer 24K Microsoft Basic 32K Ram RGB Hi-res monitor 80 × 25 7 colour display CPM compatible with printer Cost £850 sell £800 Tel 01-673 7877 eves

INTERFACE 1 8 microdrive for sale. Brand new unwanted gift £90 ono ZX printer + paper £30 ono Tel Dartford 331597 or write H Coe 24 Craydene Road Slade Green Kent DA8 2HR

IDEAL FOR BEGINNER 32K colour genie as new only two months old. Has 3 issue sound hi res full keyboard etc Only £90 ono Will consider mailing Telephone (0582) 759625

BACK ISSUES POPULAR COMPUTING WEEKLY, vol 1 nos 7 and 11–38 vol 2 nos 1–51, vol 3 nos 1–36 Also Your Computer April/82–Aug/83 Offer Tel 0309 73877

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ORIC I will swap for Spectrum, incl. 2 manuals 5 games all leads all books Leicester 680 896

BRAND NEW CASIO PB700 Portable Computer together with 16K RAM extension pack Complete with both manuals case and N-Cad batteries Cost £210+ will accept £130 ono Phone 01-527 5453

AMSTRAD CPC464 green screen MP1 power modulator Only six weeks old Used once unwanted gift £230 Telephone 0600 57129 between 5–10pm

MINERAL RIGHTS, a dictator type adventure game for the CBM 64 Only £2 25 including P/P Make cheques/PO payable to G N Woodhead 80 Elizabeth Ave Wyke Bradford BD12 8NF W Yorks

MEMOTECH MTX 512, for sale as new Boxed with tapes and cassette player £225 ono Call 01-841 1815.

CHESS COMPUTER SC1SYS Chess Champion MKG (upgraded) also MK5 module 1983/4 Computer World Champion One SY1SYS portable executive chess, thrown in free Sell £150 ono Phone 01-527 5493

ORIC 1 boxed 8 games V G C 1 book of games leads. £100 Tel 0533 580695

Wanted

WANTED for TI 99-4A ex basic mini memory speech editor UCSD Pascal or any hardware or software No games Call Bob after 6 p m on 021 444 5306 with price Thank you

WILL SWAP Aquarius 16K with mini expander with three cartridges including logo and four tapes and will swap for VIC 20 with software ring 01 804 3681 — ask for Paul

C G L M5 computer + Basic. Swap for 48K Spectrum 36 Arnold Ave., Llanrumney Cardiff

WANTED Dragon disk drive and interface in exchange for BMW Isetta bubble car Not running but complete with all necessary spares to make roadworthy Also full workshop manual and books Tel Leeds Yorkshire 665565

CURRAH Micro speech swap for interface 2 and joystick or sell for £20 — would also swap for microdrive without interface Tel 0253 63443 after 6 p.m

WANTED BBC Model B 1 2OS with disc drive and any software Write with details to Jeffrey Hughes 31 Tamerton Avenue St. Budeaux, Plymouth, Devon PL5 1TW Pay around £350

QL for time £350 ono or swap for Apple Imagewriter printer or Macintosh compatible printer also parallel interface for QL £40 Phone Tony 578 7704 after 7 p m

SWAP Gem Wizard electric organ (note £600) in superb condition for computer with extras worth around £300 or sell for £200 ono (Part exchange welcome) Phone 01-363 5113.

EXCHANGE Plustron 5-inch portable television with 3 band radio for disc drive or printer for Dragon 32/64 or Commodore 64 computer Tom 3 Wantage Woodside Telford Salop TF7 5PA Telford 581297

AMSTRAD CP464 and Toshiba multi centre exchange CBM 64 or BBC Tel 0900 65614

16K RAM pack for ZX81 wanted urgently good price plus Tel. Nick: 01 251 0538 after 6pm

WANTED TEXAS extended Basic must be in good condition around £30 Tel 0533 602487

SWAP 48K Spectrum ZX printer F042 keyboard £180 original software inc Assembler and m c book lots of mags worth over £400 for BBC B 1 2 O/S Phone Lamplugh 48 1275 between 4 30 and 10 00

WANTED CIRCUIT diagram Jupiter Ace. Any price paid (photostat will do) Duncan-Dunlop 1 Dan Y-Lan Aberkenfig Bridgend Mid Glam

WANTED DRAGON disk drive only v g c please Offers priced around £130 Also some s/w wanted on disk Phone Dave on Sheff 0742 861819 after 5 30

AQUARIUS COMPUTERS to swap for Vic 20 Tel 01-801 4737 Andreas

SWAP PRISM VTX5000 Spectrum modem for (Rtty) radio teletype interface/terminal unit compatible with Spectrum 48K. Contact Mr Razmick at 21A Station Parade, Ealing Common Ealing London W5 3LD 01 992 1168

£30 REWARD for 16K Spectrum dead or alive Phone Runcorn (09285) 66186

SWAP or sell Spectrum 48K plus 12 engine + cassette recorder for CPM 44 + C2N or £125 ao Tel 01 300 6074

WANTED MICRODRIVE and Interface 1 Will pay up to £80 Phone Stone (0785) 815856 before 5 30 or Stafford (0785) 57289 after 6pm.

WANTED A memotech MTX 512 in good nick, or consider MTX500 with 64K pay up to £200 Phone Rich on (0272) 650156 Bristol urgently needed! sorry I can't collect.

SPECTRUM Adventure helpline for details send to K Walton 30 Rufford Road Edwinstowe Mansfield Notts NG21 9HY or Tel 0623 823142 also software for sale Tel 0623 822943 or the above number

S/W wanted for BBC Pay Cash Tel 05827 66152

BBC MODEL B, wanted 1 2 OS DFS single or twin disk unit software books peripherals magazines etc Fair price paid. Ring Stuart Turner 0452/856686 Daytime 0684/29074 after 7 pm

DRAGON DISK DRIVE and Controller wanted Must be in excellent condition Will pay £100 or best offer Phone Wayne on Leeds (0532) 551631 after 4 pm (originals also for sale)

DRAGON DRIVE Plus DOS wanted I have for swap a VHF glider Tx Rx Crystals fitted for 129 8 and 130 4 MHZ Will consider Dragon or Delta DOS alone Phone 0732 880 478

BBC MODEL B wanted exchange for VIC 20 games pack games 1 cartridge (Rat Race) magazines Joystick 6 months guarantee or offer Phone Pontefract 22482 ask for Ricardo

400K DISK DRIVE—C80 wanted Switches for BBCs or swap Acorn Electron with Acorn +1 Delta 14B Joystick + S/W + Books. Tel Wraysbury 2831

PENPAL wanted with unexpanded Commodore VIC 20 in the interest of exchanging programs and games etc Write to A Walker 206 Campbell St. Rockhampton Queensland Australia 4700

MATCHPOINT AND DALEY THOMPSON DECATHLON wanted Write to Mr Allen 28 Lansdown Road 7 Kings Ilford Essex 193 AIOE

PEN PAL WITH BBC B wanted Aged 13–17 yrs to swap ideas mags and written programs Write to Mark Yelley 290 Newton Road, Rushden Northants NN10 0SY

ADVENTURE HELPLINE

Valhalla on Spectrum. Any help at all, please before I go totally mad. Phil Dickinson, 22 Clover Key Haresfinch, St Helens. Merseyside

The Hobbit. What part does the golden key play? Clive Winfield, Chantry House Catherine Ave Ilkeston, Derbyshire

Labyrinths of La Coshe on BBCB. I cannot get out of the forest at the beginning Mark Goldman, 5 Bagsley Drive Unsworth, Bury Manchester

Lords of Time on Spectrum. I can't get past the cavemen on 3 Pirate Pete on 4 nor the gladiator on 6 Michael Geddes, 18 Sea View, Easington Village Co Durham.

Twin Kingdom Valley on C64. How can I get the key from the dragon in the North Tower? Mark Azzar 64 Pardown, E Oakley, Basingstoke, Hants Tel Basingstoke 780981

Colditz on Spectrum. 1) I can't open the safe or armoury doors 2) Can't kill jailkeeper 3) Can't make a pass. Ray Heslop, 16 Redbrook Road Timperley, Altrincham Cheshire.

Rescue from Castle Dread on Vic20 How do I get past the warrior? Michael Steward, 80 Stonecross Rd, Hatfield Herts.

Sword of Hrakel on Vic20 How do I get past the wolf? How do I open the doors in the forest if the keys won't fit? Michael Steward, 80 Stonecross Rd. Hatfield Herts.

Heroes of Karn on C64. I can't get past Barrowlight bear or enter any building except the cottage Darren Owen, 56 Partridge Close, Chelmsley Wood Birmingham

Starcross on C64. I cannot do the necessary repairs in time How do I use the gold rod? M J Harnden, Pasets APF 62, RAF Halton, Aylesbury Bucks

Espionage Island on ZX81. I can't get by the sinking swamp Danny Gibbs 8 Dipple Close Drumchapel, Glasgow G15.

Twin Kingdom Valley on C64. I can't get the keys from the witch or dragon in the castle M Bailey 17 Monkswood Close, Meadow Bank Callands, Warrington, Cheshire

Ten Little Indians on BBC B. How do you open the safes in the ticket office and in the study? Stephen Malaure, 1A, Beechcroft Rd, Gosport, Hants

The Hulk on C64. What do you do when you have all the gems, and how do you find the chief examiner? Hugh Nelson, 2 The Spinney Broxbourne, Herts.

Pirates Cove on Vic 20. How do I get past the crocodiles in the pit? L Polley, 140 The Lynge Laindon Basildon, Essex.

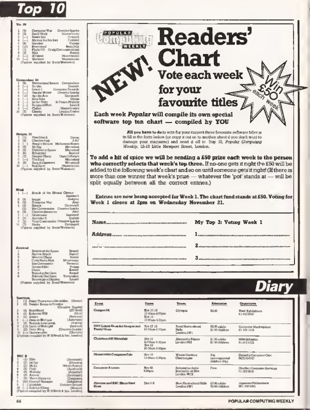
Snowball on BBC B. What is the code for the security door? Stuart McIntosh, 86 Airyhall Ave Aberdeen, Scotland. Tel: 0224 36268

Quest for the Holy Grail on C64 How do I become invisible? Mrs P Taylor, 67 Uplands Rd, West Moors Wimborne Dorset.

The Quest on C64/Vic 20 How do you get past the walls of stone on the beach? Lee Bennett, 57 Bodmin Close Battle Hill Wallsend Tyne & Wear Tel 630353

Aztec tomb Adventure on C64. How do you get up the cliff from the boat? Robert Clark, 21 The Square Ellon, Aberdeenshire Scotland

Planet of Death on Spectrum. How do I get across the river? Tony Slater, Flat 3, 87 Dunsmure Rd, London.



Top 10

Vic 20

1	(4)	Computer War	Creative Sparks
2	(3)	Duck Shoot	Mastertronic
3	(—)	[illegible]	Firebird
4	(—)	Mickey the Bricky	Firebird
5	(8)	Snooker	Visions
6	(10)	Bewitched	Beau Jolly
7	(1)	Flight 015	Craig Communications
8	(4)	Max	Anirog
9	(—)	3D Maze	Mastertronic
10	(—)	[illegible]	Mastertronic

(Figures supplied by Boots/Websters)

Commodore 64

1	(8)	International Soccer	Commodore
2	(—)	[illegible]	Domark
3	(—)	Select 1	Computer Records
4	(—)	Danger Mouse	Creative Sparks
5	(10)	Spitfire Ace	Centresoft
6	(—)	[illegible]	Ocean
7	(—)	Jet Set Willy	Software Projects
8	(—)	Return to Eden	Level 9
9	(—)	Chiller	Mastertronic
10	(7)	Cluedo	Leisure Genius

(Figures supplied by Boots/Websters)

Dragon 32

1	(1)	Hunchback	Ocean
2	(4)	Chuckie Egg	A&F
3	( )	Hungry Horace	Melbourne House
4	(3)	Mr Dig	Microdeal
5	(6)	Cuthbert in Space	Microdeal
6	(6)	Kriegspiel	Beyond
7	(7)	Dragon Chess	Oasis Software
8	(—)	The King	Microdeal
9	(8)	Ring of Darkness	Wintersoft
10	(—)	Egg Diver	Mastertronic

(Figures supplied by Boots/Websters)

Atari

1	(—)	Attack of the Mutant Camels	Llamasoft
2	(8)	[illegible]	[illegible]
3	(9)	Computer War	Atari
4	(2)	[illegible]	Centresoft
	(5)	[illegible] Commander	Creative Sparks
6	(9)	Captive Massacre	Atari
7	(—)	Gridrunner	Llamasoft
8	(8)	[illegible]	English
9	(4)	Tank Commander	Creative Sparks
10	(7)	[illegible]	Centresoft

(Figures supplied by Boots/Websters)

Amstrad

1		Roland on the Ropes	Amsoft
2		Harrier Attack	Durell
3		Monster Chase	Romik
4		Code Name Mat	Micromega
5		Star Commando	Terminal
6		[illegible] Killer	[illegible]
7		Chess	Amsoft
8		Roland in the Caves	Amsoft
8		Admiral Graf Spee	Temptation
		Roland goes Digging	Amsoft

(Figures supplied by Boots/Websters)

Spectrum

1	(1)	Daley Thompson's Decathlon	(Ocean)
2	(9)	Danger Mouse in Double Trouble	(Creative Sparks)
3	(2)	Beachhead	(US Gold)
4	(4)	Kokotoni Wilf	(Elite)
5	(5)	Avalon	(Hewson)
6	(—)	Deus ex Machina	(Automata)
7	(3)	Tornado Low Level	(Vortex)
8	(10)	Lords of Midnight	(Beyond)
9	(7)	Delta Wing	(Creative Sparks)
10	(—)	Underwurlde	(Ultimate)

(Figures compiled by W H Smith & Son, London)

BBC B

1	(1)	Elite	(Acornsoft)
2	(7)	Jet Pac	(Ultimate)
3	(2)	Mr Ee	(Micro Power)
4	(3)	Frak!	(Aardvark)
5	(6)	Wallaby	(Superior)
6	(8)	Aviator	(Acornsoft)
7	(9)	Micro Olympics	(Database)
8	(10)	Football Manager	(Addictive)
9	( )	Scrabble	(Leisure Genius)
10	(—)	Erik the Viking	(Mosaic)

(Figures compiled by W H Smith & Son, London)

POPULAR COMPUTING WEEKLY

NEW! Readers' Chart

Vote each week for your favourite titles

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Each week *Popular* will compile its own special software top ten chart — compiled by YOU

All you have to do to vote for your current three favourite software titles is to fill in the form below (or copy it out on to another sheet if you don't want to damage your magazine) and send it off to Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London.

To add a bit of spice we will be sending a £50 prize each week to the person who correctly selects that week's top three. If no-one gets it right the £50 will be added to the following week's chart and so on until someone gets it right! (If there is more than one winner that week's prize — whatever the 'pot' stands at — will be split equally between all the correct entries.)

Entries are now being accepted for Week 1. The chart fund stands at £50. Voting for Week 1 closes at 2pm on Wednesday November 21.

Name..................................... My Top 3: Voting Week 1

Address.................................. 1...

.... 2...

.... 3...

Diary

Event	Dates	Venue	Admission	Organisers
Compec 84	Nov 13-16 10.00am-6.00pm Nov 16 10.00am-4.30pm	Olympia	£2.00	Reed Exhibitions 01-643 8040
6809 Colour Show for Dragon and Tandy Users	Nov 17-18 10.00am-6.00pm	Royal Horticultural Halls London SW1	£2.00 adults £1.00 children	Computer Marketplace 01 930 1612
Christmas ZX Microfair	Nov 17 10.00am-6.00pm Nov 18 10.00am-6.00pm	Alexandra Palace London N22	£1.50 adults £1.00 children	Mike Johnston 01-801 9172
Humberside Computer Fair	Nov 18 11.00am-5.30pm	Winter Gardens Cleethorpes	50p (accompanied children 25p)	Grimsby Computer Care 0472 694047
Computer Auction	Nov 22 6.00pm	Bloomsbury Hotel Southampton Row London WC1	Free	Crocker Computer Auctions 01-393 0840
Electron and BBC Micro User Show	Dec 6-9	New Horticultural Halls London SW1	£3.00 adults £2.00 children	Database Publications 061-456 8383

New Releases

NATURAL FORM

Jewels of Babylon is Interceptor Micro's best Spectrum game to date — in technical terms at least but also in sheer playing terms (well, unless you loathe adventures)

The plot is nothing new — a fabulous treasure is hidden somewhere on an island home of pirates Find it using a sophisticated communication system of more or less normal English language sentences Near *Hobbit* like in fact

Jewels of Babylon is a graphic adventure and the graphics are really astonishing — beautifully drawn in very hi-res and displayed instantly No wonder Interceptor sent us a graphics-only demo to show them off

The little I managed to play of the adventure impressed me At the moment I am stuck in a muddy swamp armed only with a shoe and a crocodile that keeps turning up The way its program understands real sentences can be pretty confusing — when stuck in a rowing boat which I wished to leave I tried phrases such as Leave Boat and Exit Boat before I realised that the most natural English language form of the request was the correct solution An excellent program

Program	*The Jewels of Babylon*
Price	*£6 50*
Micro	*Spectrum*
Supplier	*Interceptor Micro's Lindon House The Green Tadley Hampshire*

NO VALUE

Independent software for the QL drifts through in dribs and drabs — mostly drab actually Next up is an educational program from Key Software The program intends to teach shape and colour recognition.

Now there isn't anything very difficult about this show a child some graphics and get it to press the appropriate key — the kind of simple little basic program that might retail for a couple of pounds in the classified But with the QL there is the awesome question of microdrives and their price secondly to be more cynical about it, you can always get away with less for more in the early days of a machine since the competition is that much less

Key Software's *Shapes* and *Colours* retails for £14 95 and perfectly exemplifies the principles outlined above — it's not absolutely dreadful but there really isn't too much to it. A choice of colours and a choice of slightly ropey shapes which can be selected and tested — spelling colours and so on It appears to be all in Basic and took ages to load Number one in a field of one, but very bad value just the same

Program	*Shapes and Colours*
Prices	*£14 95*
Micro	*QL*
Supplier	*Key Software Newlands Durley Brook Road Southampton SO3 2AR*

DOG CONTROL

Whenever Andromeda — the Hungarian software company — are behind a program you know you'll get something a little different Hill MacGibbon have just issued a game, written for them by Andromeda, called *Gun Dogs*.

Gun Dogs is a game in which you blast away at harmless and rather sweet-looking ducks which then tumble to the ground. Then you send your gun dog off to pick the corpse up and put it in your pack The game is a matter of skillful gun and dog control you are in competition with a rival gunman complete with his own gun and dog

Its a fun game and the graphics are excellent. the dogs really bounce about authentically — not for hardened Animal Rights or League of Cruel Sports campaigners though.

Program	*Gun Dogs*
Price	*£5 95*
Micro	*Commodore 64*
Supplier	*Hill MacGibbon 92 Fleet Street London EC4Y 1DH*

TYPED IN

Learning to type is something that a computer can definitely help you with. The laborious succession of quick brown foxes can be enlivened by the TV screen telling you how you're getting on and recording each key press

Pitman Typing is a typing tutor for the BBC B There are two types of exercises — drilling routines to get used to putting each finger in the right place and a series of sentences which test particular combinations of letters

At the end of each practice exercise, there is an assessment of your speed and the percentage accuracy It's a neat, well-designed package but you'll have to pay for it — the cassette is £9 95

Program	*Pitman Typing*
Price	*£9 95*
Micro	*BBC B*
Supplier	*Pitman Publishing 128 Long Acre London WC2E 9AN*

This Week

Program	Type	Machine	Price	Supplier
Turbo Driver	Arc	Amstrad CPC 464	£2.50	James R Paton
Flight Path 737	S	Amstrad CPC 464	£8 95	Anirog
52nd Street	Ad	Amstrad CPC 464	£4 95	James R Paton
The Holy Grail	Ad	Amstrad CPC 464	£5 00	Terry Soft
The Royal Quest	Ad	Amstrad CPC 464	£6 95	Timeslip
Pyjamarama	Arc	Amstrad CPC 464	£8 95	Mikro-Gen
Rollaball	Arc	Amstrad CPC 464	£8 95	Timeslip
Zudak Attack	Arc	Amstrad CPC 464	£2.50	James R Paton
The Moors Challenge	S	Amstrad CPC 464	£8 95	Timeslip
Merry Xmas Santa	Arc	BBC	£7.95	Icon
Multiple Test Maker	Ed	BBC	£4 50	Terry Soft
Lemonade	S	BBC	£8 50	Soopen Soft
Here & There Mr Men	Ed	BBC B	£7 95	Mirrorsoft
Battle Through Time	Arc	Commodore 64	£7.95	Anirog
Borzak	Arc	Commodore 64	£6 95	Channel 8
Bruce Lee	Arc	Commodore 64	£8 95	US Gold
Catacombs	Arc	Commodore 64	£7 95	Anirog
Ghostbusters	Arc	Commodore 64	£10.95	Activision
Harry the Hamburglar	Arc	Commodore 64	£6.95	Soopen Soft
PC Fuzz	Arc	Commodore 64	£7.95	Anirog
Phase 4	Arc	Commodore 64	£6.95	Channel 8

New Releases

OTHELLO

The Moors Challenge sounds like an unusual game but it isn't. Sometime in the life of every new machine a little after *Hangman* and *Chess* you get *Othello*

Now I haven't got anything against this game — it's quite good fun actually but (let me stick my neck out) it isn't very popular How many people ring each other up and say fancy a quick play of Othello tonight' — three or less that's how many, and one of them is a Shakespearean actor So why is *Othello* always on a computer? And why is it always one of the first releases? I think we should be told.

The Amstrad now has *Othello* in the form of *The Moors Challenge* (Moor in the sense of swarthy gentleman from foreign parts I suppose) It is an adequate version and quite reasonably priced. You can play against the computer or another player and there is a demo mode

AMSTRAD CPC464 SOFTWARE
THE MOORS CHALLENGE

Program	*The Moors Challenge*
Price	*£6.95*
Micro	*Amstrad*
Supplier	*Timeslip Software The Old Primary School Main School Stoneyburn West Lothian EH47 8PA*

SPREADSHEET

You may remember that once upon a time the Commodore 64 was a business machine. That was Commodore's idea anyway, but it never really happened. Games won the day and its not difficult to see why

The fact remains that the Commodore certainly is viable as a small business machine and here and there are genuinely serious packages to prove it The *Micro Swift Spreadsheet* marketed by Audiogenic is operated in a 'pop up' menu style much beloved of trendier and more expensive computers, and has space for a vast number of cell matrices.

The package includes ready prepared 'templates for some of the most common spreadsheet functions like home budget, car costs, loans and expenses A small illustrated manual clarifies those points out obvious from simply using the system.

Program	*Micro Swift*
Price	*Spreadsheet*
Micro	*£19.95*
Supplier	*Commodore 64 Audiogenic PO Box 84 Reading Berks*

Pick of the week

3-D WINNER

Cyclone, you will have seen adverts for Since the *Android* games and *Tornado Low Level*, Vortex have been one of the most interesting Spectrum houses of all. *Cyclone* is the latest program and it hones the three dimensional techniques used in previous games to produce the best ever Vortex game yet

Cyclone has many similarities with *Tornado* — your task is to pilot a helicopter over a large area of sea and islands all drawn with a three dimensional perspective Like *Ant Attack* you can change your view of the landscape as if switching to another camera position to see around corners.

The task is to collect and return to base a number of crates; aside from finding them there is the problem of stray aircraft roving about and occasional people requiring help Worse still is a cyclone which moves slowly around the playing area creating winds which can destroy your helicopter

From time to time fuel will get low and you'll need to use a special map to help guide you towards possible landing sites Landing is difficult but by no means as bad as in TLL Altogether, what you get is TLL with even more impressive graphics (watch the way the little figures climb up your winch rope when you rescue them) and much increased playability A winner

CYCLONE

Program	*Cyclone*
Price	*£6.95*
Micro	*Spectrum*
Supplier	*Vortex 280 Brooklands Road Manchester M23 9HD*

CONVERSION

There are a number of programs which begin life on one machine (often the Spectrum) and are converted to another (usually the Commodore 64) — it is surprising how often the conversions are unsuccessful. Many's the time when the Commodore 64 version of a game, has despite all its superior facilities, actually been worse than the Spectrum original

I don't know why this should be so — perhaps all the programming effort has been exhausted in creating the original and the new version is just a swap over Ie, the code is kept as logically similar as possible

This Week

Time Zone	Arc	Commodore 64	£5.95	Channel 8
Nato Commander	S	Commodore 64	£9.95	US Gold
Busicalc 3	Ut	Commodore 64	£75	Supersoft
Carols	Ut	Commodore 64	£4.95	Chalksoft
Lemonade	S	Electron	£5.90	Soapan Soft
The Sandman Cometh	Ae	Spectrum	£10.95	Star Dreams
Beebul	Arc	Spectrum	£1.99	Scorpio
Merry Xmas Santa	Arc	Spectrum	£5.95	Icon
Underworld	Arc	Spectrum	£9.95	Ultimate
Vampire Killer	Arc	Spectrum	£1.95	Scorpio
Here & There Mr Men	Ed	Spectrum	£7.95	Mirrorsoft
Home Accounting System	Ut	Spectrum	£8.95	Micral
Padloc Nine	Ut	Spectrum	£10.95	CSP Systems
Blocks	Arc	ZX81	£3.95	P Carlin

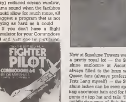
Addresses

Activision 15 Harley House, Marylebone Road, Regent's Park London NW1 5HE **Antrog Software** 28 West Hill Dartford **CSP Systems** 213 Stainbeck Road Leeds **Chalksoft** 37 Willowslea Road Worcester WR3

rather than rewriting completely using the strengths and avoiding the weaknesses of the machine

A case in point is Digital Integration's *Fighter Pilot* which is considered a flight simulation program superior even to Psion's original in the Spectrum world. On the Commodore 64 it is a much less impressive program — the two colour screen display (green = land, blue = sky) reduced screen window, lame sound when the facilities could allow for much more, all suggest a program that is not trying as hard as it could

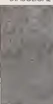
If you don't have a flight simulator for your Commodore 64 and want one (in particular



if you want one which lets you stalk and blast baddies) this is by no means a bad program, just a disappointing one

Program *Fighter Pilot*
£9 94
Price *Commodore 64*
Micro *Digital Integration*
Supplier *Watchmoor Trade Centre*
Watchmoor Road
Camberley
Surrey GU15 3AJ

DIABOLICAL



Now at Sunshine Towers we're a pretty royal lot — the Sunshine enclosure at Ascot is always filled to the brim with Queen fans (always preferred Fritz Lang myself) — the Sunshine ladies can be seen sporting enormous hats and for the gents it's top hat and tails. The rightly sing song of *Rule Britannia* still brings a tear to everyone from the humblest inkwell filler (a team of small children rescued from the workhouses by Sunshine Charities Inc a stinking rich non-profit making organisation) to the elusive and near mythical 'Mighty Joe' Sunshine himself — owner of the entire monolithic corporation and several Latin American countries

Little wonder that a new program, *Di's Baby* dealing with our own fairy tale Prince and Princess's attempts to bring a new member into the world, filled us all with deep horror and a genuine sense of shock.

How rightly has our popular press voiced the national feeling at this outrage and made *Di's Baby* the object of its righteous wrath.

In this so-called game Charles and Di's private life is revealed as never before divided into seamy sections with titles like the joys of parenthood, the conception, the months of waiting and so on. Personally, I think it is a KGB plot to destroy the very foundations of all that we hold dear and truly British. The people responsible should be put in the tower. Oh, by the way it's a rotten game

Program *Di's Baby*
Price *£6 95*
Micro *Commodore 64*
Supplier *Bad Taste*
Micredeal Distribution
41 Truro Road
St Austell
Cornwall PL25 5JE

BRAIN HUNT

Along with a new version of *Chiller* (hope you've already got your copy) Mastertronic have issued more titles for the Commodore 64 which they claim are well up to full price standard. *Mind Control* is a platforms and levels game with few extras

The idea is that you have to negotiate a variety of obstacles to reach the centre of Zyco's brain — this apparently is the only way Zyco (so evil monster) can be destroyed. The game has a lot of wit — the first section involves dodging a series of geriatrics inhabiting Zyco's nursing home.

Their relentless trudge looks funny but the art of leaping over them proved extremely difficult and I haven't yet made it into Zyco's brain. (I forgot to mention that you have to be miniaturised to enter the brain.)

In short, it seems a satisfactory dodge type game, not desperately original and if it was more expensive I probably would be harder on it, but for £1.99 it's going to give a lot of people many hours of fun



Program *Mind Control*
Price *£1.99*
Micro *Commodore 64*
Supplier *Mastertronic*
Park Lorne
111 Park Road
London NW8

Compiled by Graham Taylor

New Releases is designed to let people know what software is coming on the market. If you have a new game or utility which you are about to release send a copy and accompanying details to New Releases, *Popular Computing Weekly* 12-13 Little Newport Street London WC2H 7PP

This Week

7QP **Channel 8 Software** 51 Fishergate Preston Lancashire PR1 8BH **Icon Software** 65 High Street Gosforth Tyne & Wear NE3 4AA **James R Paton** 2 The Avenue Fallings Park Wolverhampton **Mikro-Gen** 44 The Broadway Bracknell Berks **Mirrosoft** Mirror Group Holborn Circus London EC1 **Mistral Software** 241 Forest Road Tunbridge Wells Kent TN2 5HT **P Carlin** 8 Tithe Croft Heathtown Wolverhampton WV10 0HT **Scorpio Gamesworld** 307 313 Corn Exchange Building Cathedral Street Manchester 4 **Soapan Soft** 1 Warborough Close Old Road Llanelli Dyfed **Terry Soft** 29 Woodbridge Road Barking Essex IG11 9ER **Timeslip** Stoneyburn Workshops The Old Primary School Main Street, Stoneyburn West Lothian, Scotland EH47 8AP **US Gold** Unit 10 The Parkway Industrial Centre Heneage Street Birmingham B7 4LY **Ultimate Play the Game** The Green Ashby de la Zouch, Leicestershire LE6 5JU

Key **Ad** — adventure/**Arc** — arcade/**Ed** — education/
S — strategy simulation/**Ut** — utility

This Week is a new section that covers all the new software coming on to the home micro market each week. All suppliers should send details of their new programs to This Week *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 3LD



Tacky tries

Isaac Asimov noted (in *How Science Fiction Came to be Big Business*, 1980) that *Star Wars* was well photographed made inspired use of a pair of robots and was good humoured throughout

"The result was enormous popularity, unprecedented profits, and, immediately, a host of imitations.

"As usual, the imitations were not as good as the object imitated. Some were too slavish in their imitation. Most chose those elements they saw as money-makers — the special effects — and eliminated what they did not see as contributing — the cleverness and good humour"

Asimov pointed out that if what he termed 'visual' science fiction clings to special effects as the all-in-all, each must exceed its predecessors if it is to be a block-buster and the public will become quickly jaded. He gave the example of the weekly TV series *Battlestar Galactica* which commenced with a high viewer popularity, but which was cancelled at the end of the first season.

Elsewhere Asimov remarked (*The Boom in Science Fiction*, 1979) on the compelling pressures on producers of such films, where "one throw of the dice is the difference between pauperdom and affluence." The result of the uncertainty is that producers like to deal with things which are considered to be sure fire, and the seemingly sure fire approach is more and more special effects

Many of us have seen the effects of sure-fire special effects in films, with no story attached.

Such antics are now being mirrored in the micro world

Most of us have seen the effects of sure-fire special effects in computer games, with no story attached. Dressing up — if that is the right phrase — a pretty average computer game of poker with graphics of women who 'strip still leaves only a pretty average game of poker

If you want to undress a high resolution woman on the screen as part of some badly programmed game, you deserve pity Gaining wives by clubbing, and dragging to a cave — as in *BC Bill* — serves to hide another version of the age-old micro game *Kingdom*

There has been a reaction by games players against the simplistic zap and pow games — not due to any general pacifistic leanings, but through boredom — the games do not offer enough to the player Tacky tries with tired twists or trite titillation offer no advance

The point is that there are games which do offer far more than the same old ideas all over again. There is *Deus ex Machina* from Automata. There are the new Braingames from Amplicon (in *Fame Quest* it pays to be chivalrous) and there is *White Lightning* the tremendous Forth games creating system from Oasis Software

Remember, if a producer runs out of ideas, the easiest ways to ginger up a bad product are special effects or a bit of sex and violence And that does not hold merely for computer games

It applies to films, to computer games, to video books anything you care to mention.

Boris Allan

Tommy's birthday

Puzzle No 132

Today is Tommy's birthday, of years he has a score,
In other words he's twenty not a year less or one more.
Now Tommy likes mathematics and like him you will agree
That the number twenty has this rather curious property
Twenty is divisible by ten, five, four and two,
(We only count whole numbers, coz fractions will not do)
Now taking these divisors, if we multiply throughout,
Their product is four hundred, of this there is no doubt
Consider well this number, for suprises there are plenty
This total's just the same as you would get by squaring twenty
The question now arises is it possible to find,
Some other ages that are of this rather special kind.
The task's not hard. you should achieve a measure of success
But only count those ages of a century or less!

Solution to Puzzle 128

EVE/DID = TALKTALKTALK is equivalent to 242/303 = 798679867986

In the program, which assigns values to EVE and DID, the resulting decimal is checked to determine if the first group of four digits match the second group of four If it does, and if each of the digits are different from those representing E V, D and I, the result is printed.

```
10 FOR E = 1 TO 9 20 FOR V = 0 TO 9 30 IF V = E THEN GOTO 210 40 FOR D = E + 1 TO 9 50 IF D = V THEN GOTO 200 60 FOR I = 0 TO 9 70 IF I = E OR I = V OR I = D THEN GOTO 190 80 LET EVE = E*100 + V*10 + E 90 LET DID = D*100 + I*10 + D 100 LET TALK = EVE/DID 110 IF TALK >= 1 THEN GOTO 190 120 LET T$ = STR$(TALK) 130 LET Z$ = MID$(T$,3,4) 140 FOR F = 1 TO 4 150 LET Z = VAL (MID$(Z$,F,1)) 160 IF Z = E OR Z = V OR Z = D OR Z = I THEN GOTO 190 170 NEXT F 180 IF MID$(T$,3,4) = MID$(T$,7,4) THEN PRINT EVE;"/";DID;"=";TALK 190 NEXT I 200 NEXT D 210 NEXT V 220 NEXT E
```

The results are printed with duplicate digits in the decimal part of the answer, or with the fractional part not in its lowest form are rejected by inspection.

Winner of Puzzle No 128

The winner is D P Smith of Hantone Hill, Bathampton, Bath who receives £10

The Hackers

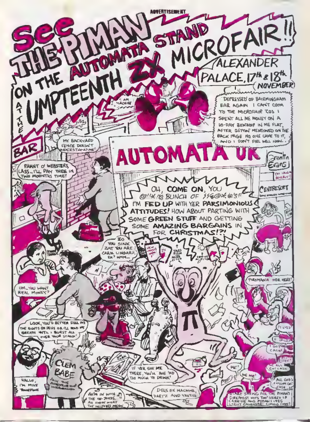
It's a sad fact sir, but we're selling a lot of our package for winding-up a business.

So you're not alone. Anyway, it's called 'Insolvency-Calc'.

...but it's only available for the Osborne, the Newbrain and the Jupiter Ace.



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BAR
MY BACKYARD FENCE DOESN'T UNDERSTAND ME!
PAHNT O' WEBSTERS, LASS... I'LL PAY THEE IN TWO MOONTHS TIME!
AUTOMATA UK
Gremlin Evans
CENTRESOFT
OH, COME ON, YOU @''*%& BUNCH OF $$¢@*#'s!! I'M FED UP WITH YER PARSIMONIOUS ATTITUDES! HOW ABOUT PARTING WITH SOME GREEN STUFF AND GETTING SOME AMAZING BARGAINS IN FOR CHRISTMAS!?!
ZO YOU SINK ZAT YOU ARE CAROL LINGARD, EH? HMM...
UM... YOU WANT REAL MONEY?
PIROMANIA OVER HERE!
LOOK, YOU'D BETTER SELL ME THE RIGHTS ON DEUS OR I'LL HOLD MY BREATH UNTIL I BURST ALL OVER YOUR STAND!
PIEVED
I GOT CASH!
WE ALL GOT CASH
CLEM BABE
HALLO, I'M MIKE JOHNSTONE
IF YER SEE ME THERE, YOU'VE 'AVE 'AD TOO MUCH TO DRINK!
ME!
ME ME!
ALL GOD'S CHILLUN GOT CASH
AH'M IN WITH THE IN-JOKES. AH KNOW WHAT THE IN-JOKES MEAN...
DEUS EX MACHINA, DARTZ AND YAKZEE
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